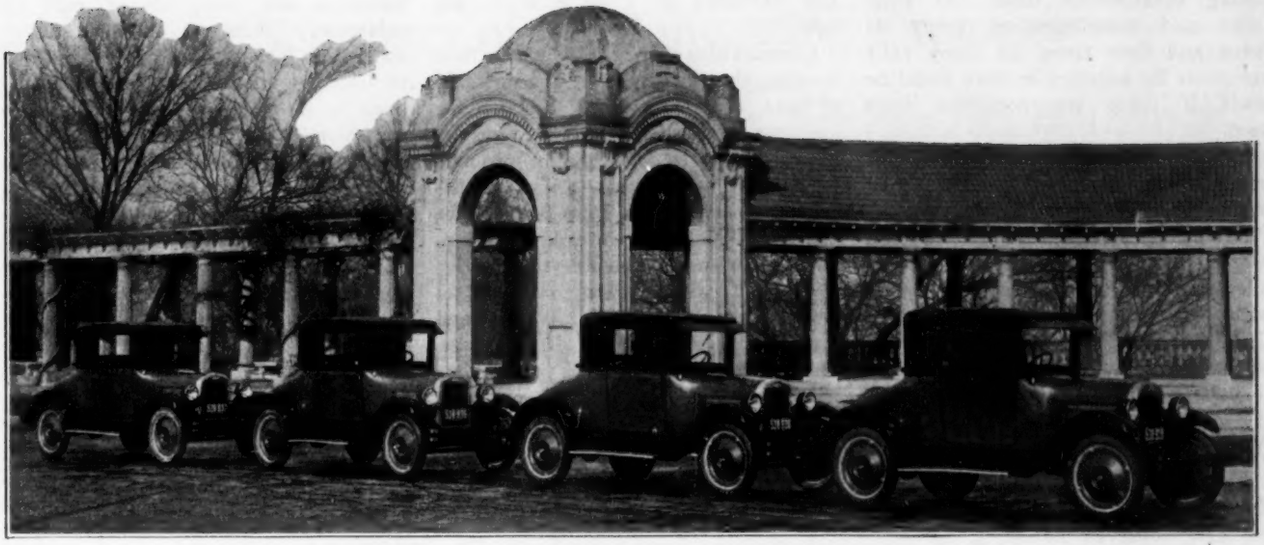


A small fleet of salesmen's cars of a popular make

Selling More Machine Tools With Aid of the Automobile

By Robert T. Mason

SHOULD machine tool salesmen own their own automobiles? This is a question pertinent to the formation of distribution programs by machine tool manufacturers and sellers. Many systems of territory coverage are employed by machine tool distributors, but all involve in some degree the use of automobiles. For city salesmen the adoption of automobiles as a means of conveyance is well standardized. For country territory work there remains some question as to the satisfaction obtained from automobiles. In a few districts, where bus service has been developed to high efficiency, some companies have found it advisable to use that means of transportation. Generally, however, the automobile is preferred to railroad or bus.

It is well accepted generally that the more expeditiously a salesman can cover ground, the more productive he is. This theory is being challenged by some companies as to its general application. William K. Stamets, Pittsburgh, confines its efforts at automobile coverage to a radius of 50 miles, with occasional exceptions. This company has found that long trips usually mean a waste of gasoline and time, unless in an emergency, or unless calls can be routed to advantage. This company feels, however, that the automobile is essential, its most favorable factor being that it is ready whenever the salesman needs it. There is no waiting for trains or tractions, calls can be made and salesmen return or go on immediately, instead of rushing or delaying to accommodate train schedules.

Manning, Maxwell & Moore, Inc., New York, believes that in its Pittsburgh district automobiles are essential, but that in territories where bus service is unusually efficient, it might be more economical to use that form of transportation. In its Chicago district it questions the use of automobiles, with the difference in topography and the layout of industrial plants there. The Pittsburgh territory it believes can be covered only by automobiles,

Increasing Profits

"COMPETITION for machine tool business has been pretty sharp in recent months," one Chicago machine tool distributor claims, "and what some dealers have made is almost literally what they have saved. No conscientious dealer wants his salesmen to carry a burden rightfully belonging to the house; yet the mileage basis may so direct attention to economical and careful operation and maintenance that the same territory can be covered more cheaply and without any out-of-pocket charge to the salesman."

saving considerable time. At least twice and sometimes as many as three and four times as many calls are made by automobile than could be made if other transportation were used.

Train has been found more economical for long distance coverage by Brown & Zortman Machinery Co., Pittsburgh. Trips up to 60 miles in length usually are made in automobile, and over that distance in train, with exceptions. Somers, Fitler & Todd Co., Pittsburgh, find that their salesmen are enabled to make 10 to 15 calls a day by automobile instead of four or five by other conveyance. William J. Radcliffe, president and general manager of the E. A. Kinsey Co., Cincinnati, states that for short jumps the automobile is feasible but that for 75 to 100-mile trips the expense in some cases was entirely too high for the net results. He said that the effectiveness of the salesman also was a factor in the situation. "It has been my experience that an automobile increases the effectiveness of the salesman," Mr. Radcliffe said.

One dealer at Chicago believes the necessity for automobiles is too much assumed. This theory is that general business conditions rather than aggressiveness dictates the amount of business accruing to an old established house. He wonders if the net return to the dealer who combs the field with 10 salesmen is greater than one who uses only six, all other conditions being equal. Volume and profit are not necessarily synonymous, he maintains. He questions whether a slightly larger sales force covering a territory closely built up like that of Chicago by means of street cars would not be as profitable as a smaller staff running up automobile expenses at 7 to 8 cents per mile.

Complexities facing executives then involve the purchase and ownership of cars, compensation or charges for salesmen, insurance and similar details. The first and major problem is that of ownership of cars. Although investigation reveals that the trend definitely is toward salesman-owned cars, many machine tool houses continue to retain title to the automobiles, the salesmen using them and the companies bearing all expenses. The tendency during the past year has been for salesmen to purchase their own cars, being reimbursed either at flat daily or weekly rates, or by a fixed mileage.

Where the salesman-owner car policy is in practice, machine tool companies claim to be effecting distribution economies, and in addition are relieved of a large amount of supervisory detail of costs. Proponents of the company-owned machine find little to support their plan except custom. Some companies operating under that system find salesmen so well satisfied with conditions, especially where the employe turnover is light and men have been connected with their organization for a long time, that no effort is made to change to other plans.

Generally, however, company-owned cars are subject to greater expense, due to laxity of salesmen in maintaining them in satisfactory condition. Companies which have changed over to the salesman-owned car find that economies in cost come largely from the decrease in repairs. It is natural for a salesman to keep his personal car in better condition than he would if company-owned.

Reports of 193 companies in various fields indicate that 117 favor the purchase and ownership of cars by salesmen. Fleets or mileage allowance is an increasingly important topic to Chicago machinery dealers, sharpened in interest by keen competitive conditions. The problem is being investigated vigorously and almost entirely from the standpoint of economy to the dealer. A canvass of the situation at Chicago reveals a preponderance of company-owned or fleet cars. This is more of a static position than a trend, however. When the automobile was introduced in sales work, many dealers assumed that rapid transit was an undisputed item of selling cost and equipped their sales forces as the most direct method of shouldering the expense. Those companies now operating on a mileage basis at Chicago have swung away from the company-owned car because convinced of economies to be gained.

A few dealers maintaining company-owned cars have justified their position by cost analysis, but many machinery houses have never investigated the subject deeply and are not familiar with their expense for this phase in distribution.

"The difference in attitude of a man towards his own car and toward a company-owned car is marked," states a leading Chicago machinery seller. "When the company owns and services the car, the salesman is inclined to be careless, drive it to extremes and be less willing to pay it the small details of personal attention which avert repair bills. The attitude is more one of carelessness than of purposeful neglect. But given his own car, the salesman will see that it is housed properly at night, he will keep it in good running condition at all times, and there will be fewer gaps when painting and other servicing is necessary. In one

Expense Sheet Form Used by Chicago Distributor

COMPARISON OF ITEMIZED COSTS FOR THREE MAKES OF CARS

	MILES OPERATED	OPERATING EXPENSE								REPAIRS AND MAINTENANCE	
		GASOLINE				LUBRICANTS		TOTAL		TIRES	
	Company	Gals.	Miles Per Gal.	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile
Ford	11,996	676	17.7	138.02	.0115	15.35	.0012	153.37	.0128	10.40	.0008
Chevrolet	8,283	394	21	71.30	.0086	11.50	.0013	82.80	.0099	1.25	.0001
Dodge	9,169	563	16.3	121.43	.013	18.65	.002	140.08	.015	7.00	.0071

	REPAIRS AND MAINTENANCE								Insurance		Reserve For Replacement		GRAND TOTAL	
	Engine		Miscellaneous		Garage	Rent	Total							
	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile	Amount	Cost Per Mile
Ford	104.53	.008	74.75	.0062	77.75	.0062	267.13	.0222	40.90	.0034	194.30	.016	655.70	.054
Chevrolet	.....	.....	14.08	.0014	71.00	.0085	86.35	.01	30.12	.0036	139.80	.017	339.05	.04
Dodge	.....	.....	37.96	.004	31.00	.003	75.96	.0041	20.30	.0042	195.69	.021	432.03	.047

Summary of Car Operating Expenses

Figures from Dartnell Corp., Chicago

Car	Time driven	Storage	Gas	Oil	New tires	Tire repairs	Car repairs	Miscellaneous	Depreciation	Total cost	Mileage	Cost per mile
Dodge	Year	$ 68.25	$ 243.17	$ 68.45	$ 90.45	$ 23.30	$ 164.86	$ 105.13	$ 422.00	$1185.61	21,477	0.0552
Chevrolet	Year	40.00	193.33	47.70	50.99	67.96	277.34	50.17	315.00	1042.49	18,900	0.0551
Chevrolet	Year	47.90	181.30	45.35	113.90	17.10	110.80	11.93	300.00	828.33	18,771	0.0441
Chevrolet	Year	10.50	150.75	44.95	33.13	11.50	170.71	9.75	229.00	660.29	13,874	0.0475
Chevrolet	Year	13.75	180.78	40.10	44.13	12.70	192.14	44.87	246.00	774.47	15,492	0.0499
Ford	Year	47.75	155.01	53.03	28.89	17.15	103.78	32.40	250.00	688.01	12,280	0.0560
Ford	11 months	105.90	191.19	64.35	57.17	23.15	58.75	37.45	191.55	729.51	14,588	0.0500
Ford	8½ months	8.00	123.68	38.44	78.92	11.00	175.09	71.21	67.00	573.34	11,120	0.0515
Ford	9 months	37.25	134.77	38.65	45.74	13.65	264.01	20.75	20.00	574.82	10,642	0.0540
Totals of 13 cars operated....		$444.20	$1711.03	$ 490.71	$ 608.49	$ 225.67	$1650.95	$ 434.35	$2441.55	$8006.95	153,214	0.0522

Data compiled from a large distributor in Iowa.

year, including the trading in of some old equipment, our fleet average was $3000 per car. Four-year experience with mileage allowance, following a long experience with fleet cars, convinces us that the former is to be preferred."

The past year has seen a marked change in the question of automobile ownership in the East. Two or three years ago fleets of from 10 to 50 cars of a standard make were not uncommon. At present there is scarcely such a fleet left in New England, except where advertising and display cars form an important part of the sales campaign. Machinery houses, hardly without exception, have changed from the company-owned to individually-owned automobiles. A marked saving is the result. Dealers in New England state that it is human nature to take better care of personally-owned property and that the little more care which the salesman exercises in maintaining his own car is the big factor in giving that automobile a lower operating expense than if company-owned.

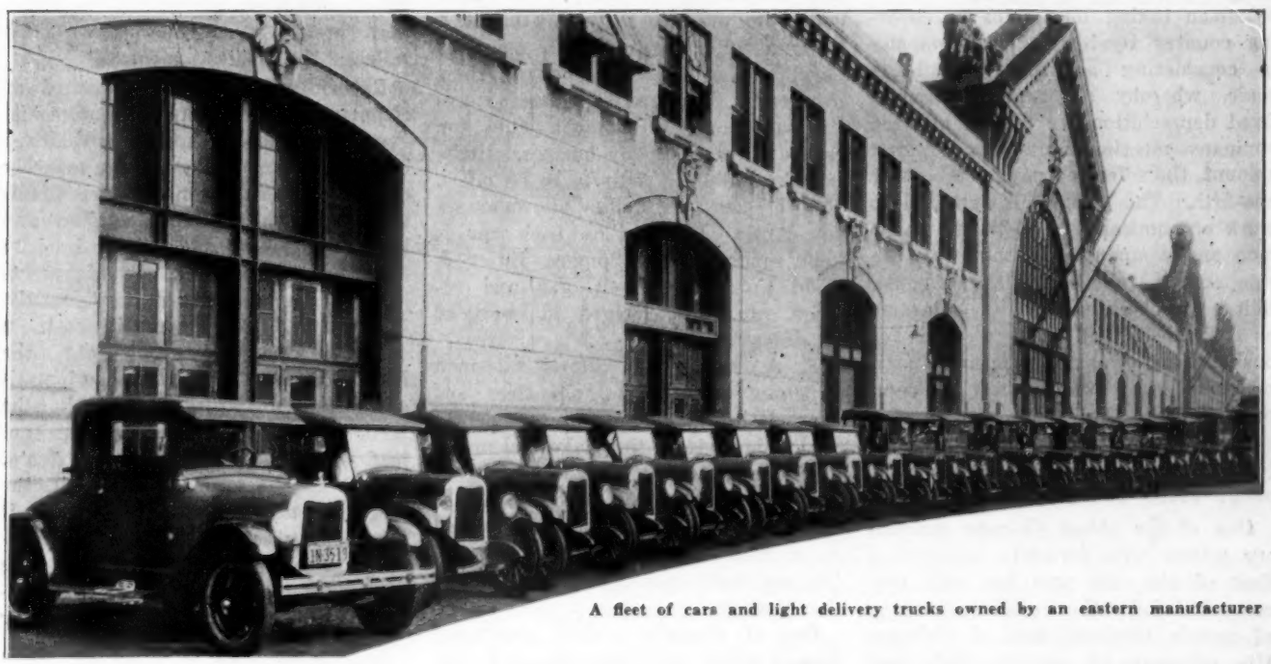
"Competition for machine tool business has been pretty sharp in recent months," one Chicago interest said, "and what some dealers have made is almost literally what they have saved. No conscientious dealer wants his salesmen to carry a burden rightfully belonging to the house; yet the mileage basis may so direct attention to economical and careful operation and maintenance that the same territory can be covered more cheaply and without any out-of-pocket charge to the salesman."

This is the ideal for which progressive machine tool dealers are striving; to decrease distribution costs, to maintain satisfied salesmen and to increase sales totals with greatest efficiency, resulting in enlarged profits for both employer and employe.

With the adoption of the salesman-owned car policy, the problem of financing purchases must be solved. Some distributors finance the purchase by advancing a high proportion of the total cost of the machine, retaining title and insurance until repaid by the salesman. Others finance the purchase by paying the initial sum on a partial payment plan and then allowing an increased mileage until the car is paid for, reducing the rate afterward to cover operating expenses only.

One Chicago house finding it necessary to finance purchases by salesmen, credits their accounts with $15 a week until the cost of the car has been met. After that the salesman is assumed to have paid for the car and then is granted $15 a week for its upkeep. Another Chicago dealer finances the purchase by paying salesmen 11 cents per mile operating cost until the car is paid for and then dropping the mileage allowance to seven cents.

Most companies are not concerned with the purchase arrangements where the salesman is to own the car, specifying merely the price limit on which it will base its rates of compensa-



A fleet of cars and light delivery trucks owned by an eastern manufacturer

tion. One large house has determined the maximum as a car equal to but not exceeding in price a Buick standard coach. Although not encouraging purchase of any particular make of car, companies do aid their salesmen by offering data and cost figures for determining the type of machine to be selected.

Several companies in Boston have endeavored to have the individual salesmen finance their cars independently of the company. Where this has been impossible or unusually difficult, the company has loaned them money at 6 per cent, payable in small amounts at regular intervals. One company buys the cars outright for its salesmen, allowing 14 cents a mile on business trips until paid for. This company reserves the right to select the make of car. Another plan in New England is to divide the mileage allowance, paying part in cash and allowing the balance to go towards the car principal.

Once the car is purchased, the most important problem is faced, compensation of salesmen. Various plans are employed. Flat daily and weekly rates, mileage scales and fixed drawing accounts are in vogue. The mileage allowance is the most widely accepted. Day rates run from $2 a day for city salesmen to $5 a day for country men. One large machine tool distributor in Cleveland is in the process of changing its plan. This company had paid its men a flat daily rate of $3.50 for use of private automobiles when employed on company business. The rate was satisfactory to city salesmen and men on short jumps, but was found inadequate to meet the expenses of salesmen taking long trips in covering country territory. This company is considering adopting a mileage scale, whereby all expenses and a fixed depreciation are totaled and the company meeting four-fifths of that amount, the salesmen paying the other one-fifth. This system is expected to work economically for both the salesmen and company. In this way the company is relieved of all responsibility of checking up its salesmen as to the actual mileage used for business and that for pleasure. Estimates made by executives of the company indicate that there wili be considerable saving from the former system which involved expenditure of about $1000 per year per salesman.

One of the oldest Chicago machinery sellers who formerly operated a fleet of six cars now has only one, necessitated by the peculiar coverage of certain territory east of Chicago. His salesmen all operate their own cars, at the end of each week reporting the business mileage they have covered and are paid on a basis of 7 cents per mile. The salesmen are satisfied with this allowance and the seller, following his experience with fleet cars, feels he is relieved of the worries that attached to his fleet, especially abuse.

Payment of all expenses as they occur is fast losing popularity. The lack of incentive for salesmen to hold costs down made this system unacceptable. Flat daily allowances also are becoming less of a factor. Lack of flexibility in meeting varied conditions makes this plan less feasible as the number of salesmen-owned cars increases.

As expenses of automobile upkeep depend in a large degree upon the care and ability of the salesman, the mileage rate is more favored. Some companies use a flat mileage allowance with a maximum for a week or month. This compares with a drawing account, within which a salesman must accommodate his expenses. The surplus between expenses and fixed amount in this plan often is used to build a fund for purchasing a new car for the salesman. The fixed account plan has many adherents, but the majority of machine tool distributors are turning to the mileage rate as the most satisfactory.

Cost of operation and allowances per mile vary. Brown & Zortman Machinery Co., operating nine cars, pays 6 cents a mile to its salesmen when salesmen-owned cars are used on business within a 60-mile radius. Manning, Maxwell & Moore, Inc., operates both company and private-owned cars. Its practice is to pay about 8 cents a mile, varying with make of car, to the salesmen owning their own cars. William K. Stamets pays its men 5 to 10 cents a mile for cars used on company business, limiting the radius of activity to 50 miles. The 5 cent per mile allowance is for Fords. Expense on each car is kept separately by Somers, Fitler & Todd Co. and the oil, gas and repairs, etc., are charged to overhead or sales expense.

E. A. Kinsey Co. allows salesmen expenses on gasoline, oil, tires and depreciation. The amount of depreciation depends on the make and model of the automobile, but in most cases does not exceed $750 as the value of the car. The depreciation is figured on a monthly basis. The owner of the car must pay for all repairs to the machine.

One of Boston's leading machinery houses which last year changed over from five company to five privately-owned cars for its salesmen, now pays the fixed sum of 10 cents a mile on all business trips. Liability insurance also is paid. With the company owning the insurance, depreciation and all operating expenses during 1924 totaled slightly in excess of 15 cents a mile. This company states that its salesmen like the present plan better and that they are able to break even at the 10-cent figure. Choice of machine is left to the individual, two of the five machines being used cars of the $1500 class.

Some companies want all their cars painted alike for advertising purposes. At Boston a company operating 18 such cars, all uniquely painted with the company's advertisement, buys new cars of a moderate price every year, and finds the expense between 16 and 18 cents a mile.

An investigation of 194 companies reveals that in 1925 6 cents a mile was the average allowance, according to a report of the Dartnell Corp. Chicago. The average has been found slightly higher by IRON TRADE REVIEW in the machine tool industry. Seven cents is the generally accepted level.

A large heavy finished steel producer at Chicago has its salesmen on a flat 10-cent per mile basis. This is regarded as generous and one official of the company states that if a salesman drives 1000 miles per month he can come close to buying his car in a year. Garage, insurance and other fixed charges are the same whether the car is driven 100 or 1000 miles per month. It is figured that below 700 to 800 miles per month the salesman breaks even and above this mileage he makes money.

Rather different in its method of compensating its men for automobile expense is the method of a Chicago house. The company sets a monthly quota for its salesmen. This is predicated upon the salesman's salary and his proportion to the overhead. Into the overhead enter the cost of operating his car and the interest on the investment. The more it costs a salesman to operate his car, the higher he makes his quota, automatically, and his participation in the bonus plan of the company does not begin until he has passed his quota. This plan has considerable merit, the machinery house states, because it tends to eliminate any worry concerning the private use of the cars or their abuse. Salesmen of this company use their cars for pleasure, for

(*Concluded on Page* 7)

Making High Grade Steel-XII

Surface Finish of Cold Strip Steel Undergoes Improvement Due to the Development of Rolling and Supplementary Equipment

By John A. Coyle

FEW conveniences would be enjoyed by the American housewife if it were not for cold-rolled steel of various degrees of hardness or softness as the need arises. There would not be the numerous office and shop conveniences enjoyed by the American manufacturer and business man, nor would it be possible to give the numerous articles of stamped and drawn ware the nicety of finish. The sewing machine and radio would not have the delicate design nor would the typewriter and typesetting machines be anything but crude instruments. The advantages lent to manufacturers makes a long list.

Improvement recently has been made in the surface finish of cold-rolled steel. At the beginning of the business the surface was rough and dirty, due principally to the difference between the thickness of the hot-rolled strip and that of the finished strip being only 0.040-inch at maximum. Today, in plants of any pretentions whatever, the finish is mirror-like and a microscope would be required to discover roughness or dirt. If any such steel reaches the user, it may be due to the over-intensive desire for large tonnages of a delicate product; In the main it is not because the manufacturer intends it, but is due to unconscientious and slipshod inspection. Where the initial tendency was not to pit the surface of the hot-rolled strip by overheating and the raising of a scale or by overpickling to remove roll scale and other dirt, sulphuric acid used for the purpose has to a degree been supplanted by other pickling or cleaning compounds.

While the annealing operation was difficult to control in the early days of cold-rolled steel, it is now possible to anneal accurately because of the perfecting of pyrometers and of the understanding of the time element as affecting and affected by mass. In addition, the various supplementary apparatus such as the scleroscope, the brinell and Erickson machines, the bending and hammering tests and others help toward a perfect annealing. The old bending and napkin test, however, still is a useful expedient.

Grades Show Little Change

About 1885 in the Pittsburgh district, the qualities of cold-rolled strip were, first 0.10 per cent carbon bessemer or open hearth, to which were imparted the stiffness, semistiffness or soft pliableness by variations of the process. The latter has not undergone material change and at present is about as follows:

Grade	Carbon %	Mn. %	Phos. %
Dead sofe	0.08	0.48	0.025
	0.09	0.45	0.020
	0.10	0.42	0.020
	0.11	0.39	0.018
	0.12	0.36	0.015
Quarter hard—Same as dead soft cold rolled steel			
Half hard	0.08	0.51	0.027
	0.09	0.48	0.025
	0.10	0.45	0.020
	0.11	0.42	0.018
	0.12	0.39	0.015
Hard	0.08	0.55	0.040
	0.09	0.52	0.033
	0.10	0.49	0.030
	0.11	0.46	0.025
	0.12	0.43	0.020
Key	0.10	Bessemer steel of commercial variance.	

Note:—Foregoing maximum analyses are of open-hearth steel except that for key stock.

The number of thousandths reduction, after annealing in closed boxes or pots, may differ widely, all depending on the customer's requirements. Dead-soft cold-rolled steel is rolled to gage and is bright annealed in strips or long coils by packing in boxes about 12 feet long or in round boxes accommodating the size of the coil. Around the strips to be annealed is packed cast-iron turnings for the best results, and it is interesting to know that extreme brightness or dullness of the steel is obtained according to

COLD-ROLLED STRIP STEEL PASSING THROUGH THE FORMING AND WELDING OPERATIONS INVOLVED IN TUBE MAKING

the silicon content of the borings. At times the silicon is mixed with charcoal in minute amount or other material having the qualification of absorbing oxygen.

Recently the continuous performance of bright annealing of the coil passing through a special muffle furnace has speeded up production. Attachment cold-rolled steel, half hard, quarter hard, etc., requires two rollings, with an intermediate annealing before finishing. Hard cold-rolled and key steel are handled in about the same way, that is, they are rolled to gage from the hot-rolled stock in thicknesses 0.042-inch or 10 Birmingham wire gage and thicker; when lighter the hot-rolled stock is annealed before cold rolling. A knowledge of what the customer wants such as hard steel smooth finish, extra smooth, soft to bend with grain or against grain, or for deep drawing usually is required by the mill.

Hard cold-rolled steel punches readily, takes no hard bends and generally is used for flat work. Cold-rolled key steel works about the same as hard cold-rolled steel, except that it punches less readily and is harder on punches and dies. Half-hard cold-rolled steel punches readily, bends to flat or curved shape lengthwise of the grain, and is somewhat stiff. Quarter-hard cold-rolled steel, or, what is known as attachment quality, will bend both ways of the grain flat on itself, and draw into the less difficult or deep shapes. Dead-soft cold-rolled steel will punch, draw or bend to any shape, and can be furnished almost as soft as copper.

The foregoing qualities of steels were originated because of the needs of the bicycle, sewing machine and typewriter trade. If used for wearing parts, they had to be casehardened after bending or stamping. Later, they were augmented by steels of higher carbons, particularly 0.15 to 0.18 per cent, 0.25 to 0.30 per cent, 0.45 per cent 0.50 to 0.60 per cent, 0.60 to 0.70 per cent and 0.70 to 0.80 per cent, the range to 0.45 per cent being hardened or stiffened by water quench and the carbons 0.50 per cent and higher by oil quench and draw.

This foregoing is given to show the facility with which manufacturers took up the higher carbon ranges to suit their customers' needs. Users apparently found it necessary to import cold-rolled and cold-rolled tempered steel from Sweden, where the manufacturers today specialize on a high-grade product. To offset the influx of such steel, producers got into the carbon ranges from 0.85 to 1.05 per cent and in many cases higher, as for example razor blade steel, where precise thickness and width is required. This product now is manufactured by a few of the few specialty mills which make high-carbon stock the main product. The specialty mills are in marked contrast with the tonnage mills which will not accept

FINISHING END OF A COLD-ROLLED STRIP DEPARTMENT SHOWING LEVELING AND CUTTING MACHINES IN FOREGROUND

high-carbon specifications and whose profits are predicated on and result from maximum tonnage resulting from automatic hot mills and tandem cold-mill practice.

As additional evidence of what is done by the modern specialty plant the single example is cited of an alloy frame steel, originated to give greater strength than ordinary frame steel with a tensile strength of 56,000 pounds a square inch. The first alloy steel for the side frames of motor cars was prepared and hot rolled in Pittsburgh and cold rolled and treated in a plant near Cleveland. Four different formulae were put into work, as follows:

No.	C	Mn	Si	P	S	Ni	Cr
1	0.29	0.60	.....	0.031	0.024	2.71	.....
2	0.24	0.81	0.060	0.010	0.031	3.09	.....
3	0.31	0.75	0.065	0.025	0.026	4.56	.....
4	0.30	0.11	.....	0.007	0.009	1.62	1.07

The steel selected for test, and upon which many cold-rolled alloy steels are based was steel No. 4. Physical tests were as follows:

Grade	Tensile strength, lbs. sq. in.	Elastic limit, lbs. sq. in.	Reduction of area, %	Elong. in 2 inches, %
Cold rolled	116,300	110,200	22.5	6.5
Annealed	86,000	54,000	50.0	24.0
Chilled	250,700	129,900	10.5	3.0
Treated	133,300	100,000	39.4	9.5

With the limited knowledge of chilling or treatment, best results were not obtained. The chilled test should have been furnace drawn, as the safety factors are too low. Credit should be given to the men engaging in the business, as they had to devise reels and takeups, five-roll flatters, moving side trimming shears and properly synchronized end trimming shears. The rolls were a problem, and have progressed from the ordinary hard-chilled cast-iron roll to the present alloy-contained hardened and tempered roll. The machine makers were not long in designing equipment to fill the void, and today strip installations are of the highest order of perfection.

Automobile builders are wide awake to the benefits to be derived from the use of cold-rolled steel. They have minimized the weight of their cars by its use. Applications of cold-rolled strip steel include hair clipper blades, tape lines, hack and band saws, brick mold plates, shoe and gaiter buckle steel, springs for clocks and phonographs, safety razor blades, car seat springs, plane iron blades, diaphragms, shoe shanks, clutch disks, small circle cutting knives and saws, trowels, scrapers, lawn mower blades and paper knives. Cold-rolled strip steel can be purchased in patented temper or lead hardened and oil drawn, or furnace hardened and oil drawn. This department of the art is deserving of attention.

The user must not expect, however, to buy cold-rolled high-carbon steel near the price of cold-rolled steel made from lower carbon steel because the treatment becomes more costly and intricate with the rise in carbon, and particularly costly and delicate if the steel, in addition to having a high-carbon content, contains diverse alloys. Stock for the soft or easy grade to manufacture is made on full, or semi-automatic mills on the general basis of tonnage while the higher or tempering carbons and the tempering carbons with alloys are made on hand mills. In the latter event the stock is a tool steel grade and requires the same treatment as given tool steels, namely, lower heats, slower speeds and greater discard.

Steel of any carbon or carbon-alloy character can be rolled cold on highly polished rolls, with clean surface, to any number of thousandths of an inch up to the impractical and uncommercial thickness, which may range from ⅜ to ½-inch. The thin limit is of moment, so it suffices to say that 0.002-inch is not unusual. A safety razor blade is 0.007-inch thick.

Selling Machine Tools With Automobiles

(*Concluded from Page* 4)

travel to and from work and keep them in private garages.

Comparison of types of automobile used is closely affiliated with any attempt to standardize on mileage costs. The machinery house in Chicago which probably has made the most detailed study of such costs states that 8 cents a mile is the average. During the first six to eight months of car life, the cost hovers about 4 cents a mile, but as engines and tires begin to require attention costs mount.

One fact which is becoming more prominent in salesman operation of automobiles is that the low first cost of a car does not always imply low operating expenses. The experience of a machinery house with headquarters in Chicago, but covering most of the trade territory tributary to that city is illustrative of this point. This house, which is one of the most progressive, has made a careful analysis of its costs. It operates 12 cars, and because of the desirability of transporting prospects to view installations concentrates on sedans and coaches.

For purposes of comparison, three different makes of cars have been selected from this fleet, Ford, Chevrolet and Dodge. Detailed costs are presented in an ccompanying table.

The Ford is a sedan purchased May 2 1924, and costing $783.50, including accessories. This machine has been operating in Milwaukee and surrounding country. In justice it should be said that the record on this car covers the period from July 1, 1925, to March 1, 1926; because of previous service it shows engine costs which do not yet appear against the Chevrolet and the Dodge.

The Chevrolet coach was purchased Sept. 9, 1925, cost $849.35 complete and has been operating principally in Chicago. The Dodge also is a coach which was acquired July 25, 1925, and cost $1287.30. It has been operating principally in Iowa. In the case of both the Chevrolet and the Dodge the operating costs cover the period from the date of purchase to March 1, 1926. The insurance is divided into 12 equal portions and charged up monthly. The Dodge has been given a life for four years and the Chevrolet and the Ford each three years, with replacement reserves charged monthly.

On this basis the Ford has cost 5.4 cents per mile, the Chevrolet 4 cents and the Dodge 4.7 cents. If the engine cost of the Ford, because of its history prior to cost keeping, is eliminated the average per mile is brought down to 4.6 cents. This machinery house expects the per-mile cost to run up to about 8 cents as the cars grow older and is satisfied that this will be reasonably low.

This company's fleet of 12 cars operated a total of 91,988 miles in the last half of 1925. The total operating cost for the items enumerated in the accompanying table but not including interest on the investment, was $4843.35. The average cost per mile was approximately 5.2 cents.

Many additional details enter into the salesman-automobile-company relationship. Insurance is one that is still a moot question. Manning, Maxwell & Moore, Inc., covers all its cars in a blanket policy to protect the company in case of accident. If a salesman were using his personal car for business and met with an accident, his personal policy would not cover the injured person or damaged property. A victim could sue the company for whom the salesman was employed. William K. Stamets also insures all its cars. Most machine tool distributors cover their cars, either company or privately-owned, with liability insurance.

As one of the principal items in sales expense, machine tool distributors are finding increased profits in reducing the wastes in the use of automobiles by salesmen.

Large Uses of Steel In Small Ways

VENTILATION long has been an important factor in the construction of manufacturing plants, especially where fumes and other impurities in the air might be injurious or obnoxious to workmen. Only recently, comparatively, has ventilation been considered by builders and manufacturers with the same scientific regard that has been general to problems of production. About 16 or 17 years ago a company in Cleveland started the manufacture of rotary ventilators. Prior to that time stationary ventilators, and various designs of movable and force ventilators had been designed. At present, demand is fairly evenly divided between the rotary and stationary types and consumption is measured in the tens of thousands.

About a dozen manufacturing plants are devoted exclusively to the production of ventilators. In addition there are many independent sheet metal shops which make a small number in conjunction with other sheet products.

Conservative estimates place consumption of sheet steel used in ventilators at 3000 tons annually. In addition to the sheets approximately 200 to 250 tons of iron castings are used, a fairly heavy tonnage of steel flats, angles and channels, and a smaller amount of bronze and copper parts.

A typical ventilator, of the rotary type, consists of a base, a collar and top which includes the adjustable louvre dampers, the vane, controls for regulating the dampers and the bearing on which the top rotates.

Galvanized sheets of 18 to 24 gage are formed into the various shapes necessary to construct the base, the collar and top. The collar, or that part fitting into the base, usually is fabricated of a sheet two gages heavier than the top, extra rigidity being essential. Fabrication is the same for all sizes, which range from 10 to 72 inches in diameter and weigh from 15 to 780 pounds each.

The base is formed on a bending brake and riveted to a circular strip fabricated of sheet steel, the width depending upon the diameter of the ventilator. The bottom of the base may be horizontal, at an angle or pitched to fit different types or roofs. The collar is a piece of sheet steel formed circularly, corresponding to the top of the base. Four angles from the collar are bent to the center of the ventilator and support a bronze bushing. The entire weight of the rotating member of the ventilator then rests on bronze balls in the bushing. The top is formed of sheet steel, braced with two transverse steel angles which rest upon the upper half of the bronze bushing. The angles are

(*Concluded on Page* 11)

Ventilators

THIS is the sixty-seventh of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the great American tonnage.

The first article on "corsets" appeared Nov. 22, 1923. Other articles appearing fortnightly since are:

Pins	*Pens*
Cotton Ties	*Steel Wool*
Toys	*License Plates*
Spinning Rings	*Hypodermic Needles*
Card Clothing	*Shoe Steel*
Tie Plates	*Crushed Steel*
Tacks	*Skates*
Knives and Forks	*Needles*
Surgical Instruments	*Phonograph Needles*
Fence Posts	*Golf Clubs*
Eyeglass Cases	*Mechanical Pencils*
Fishing Tackle	*Burial Caskets*
Dental Drills	*Telephones*
Pocket Knives	*Radio Towers*
Rat Guards	*Brushes*
Snap Fasteners	*Electric Bells*
Paper Clips	*Bookbinder Wire*
Steel Vests	*Sucker Rods*
Electrical Conduit	*Watch Hands*
Radiator Furniture	*Steel Furniture*
Notebooks	*Highway Markers*
Metal Beds	*Camp Cots*
Bolts and Nuts	*Flexible Shaft*
Metal Lath	*Wood Pipe*
Tin Cans	*Buttons*
Umbrellas	*Sheet Metal Screws*
Steel Barrels	*Rivets*
Washers	*Billboards*
Overall Trimmings	*Razor Blades*
Bird Cages	*Metal Strapping*
Turnbuckles	*Lace Tips*
Steel Derricks	*Oil Cups*
Handle Cores	

AN UNUSUALLY LARGE INSTALLATION OF ROTARY VENTILATORS ON BUILDINGS OF THE WHITE MOTOR CO., CLEVELAND

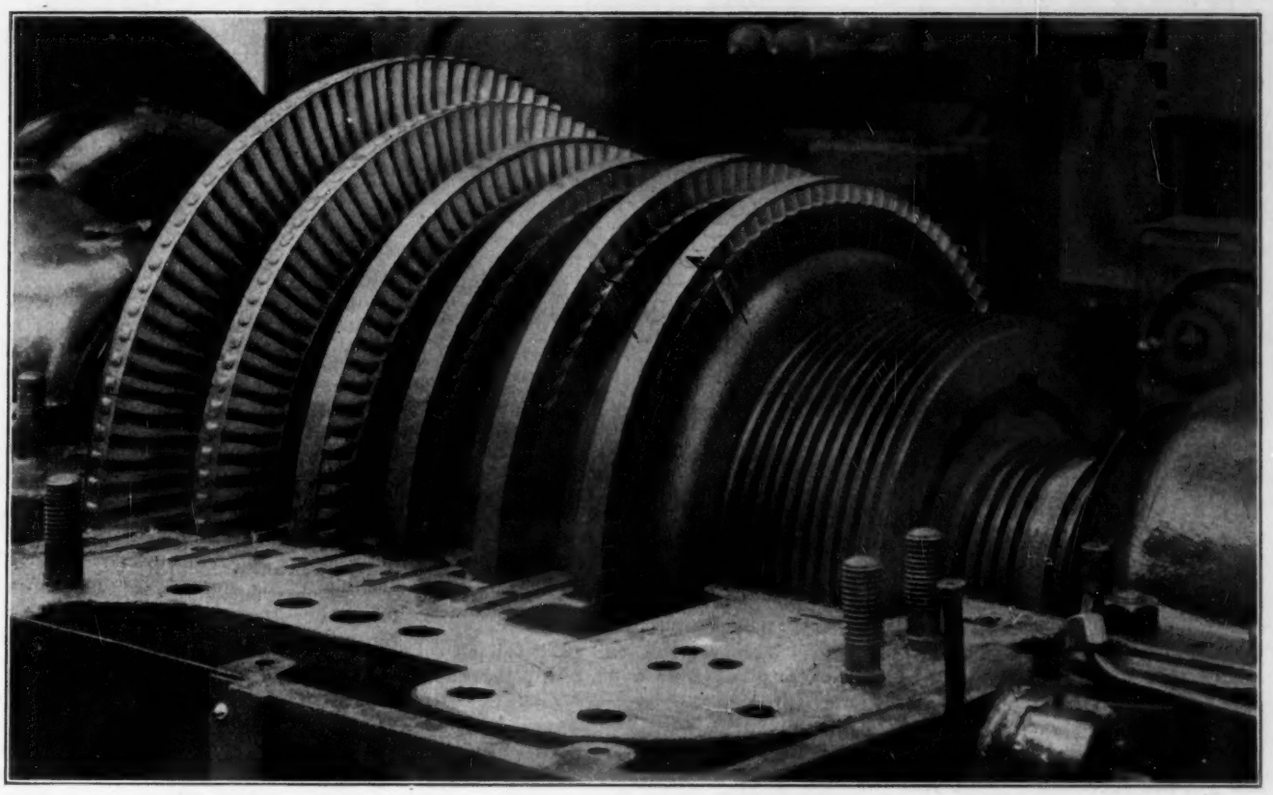


Fig. 6—Turbine blades built of special steel which is resistant to erosion by wet and superheated steam

Economizing in Fuel and Material by Use of Special Steels—II

EFFICIENCY of most types of mill and reheating furnaces, and many of the furnaces used in metallurgy, as for instance in the open-hearth process is low, and the need for fuel economy has given a great stimulus to more intensive heating. On the other hand, water-cooling devices, waste heat boilers and renewed attention to the highly complicated and difficult question of regenerator design, materials and the best method of ensuring efficient and rapid heat exchanges in the chambers of such appliances, have raised a number of fresh problems which involve the employment of special nonscaling and heat-resisting materials. Substantial economies may result from alloys.

The special steel previously referred to now is being employed for making recuperator elements and tubes. The tubes can be made much thinner, and do not suffer from fragility. At the same time their thermal conductivity is such as to greatly accelerate the necessary heat exchanges, and effect substantial economies by reducing the weight of materials required. Air leaks and short-circuits, so often responsible for serious heat losses and even failure in brick or tile recuperators, are entirely obvinted, and even the use of high-pressure blast finds a satisfactory solution when they are used.

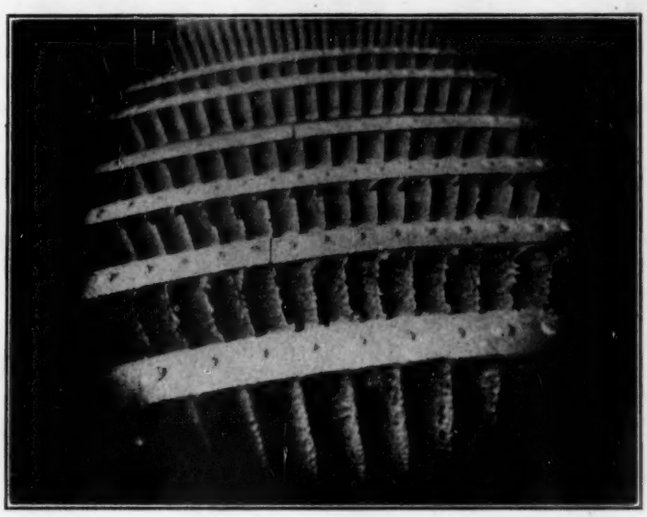


Fig. 7—Turbine blading showing the corrosion caused by steam of a saline character

Metallurgical problems involved in chemical works practice include those which enter into the question of power production in so far as they relate to the strength of ferrous and other materials, at high temperatures and pressure, and also at high pressures but low temperatures. They comprise, moreover, to an intense and specialized degree, the resistance of such metals to corrosion. The behavior of

An article prepared by Sir Robert Hadfield and Hadfields Ltd., Sheffield, England. The first part appeared on page 1561 of the June 17 issue of IRON TRADE REVIEW.

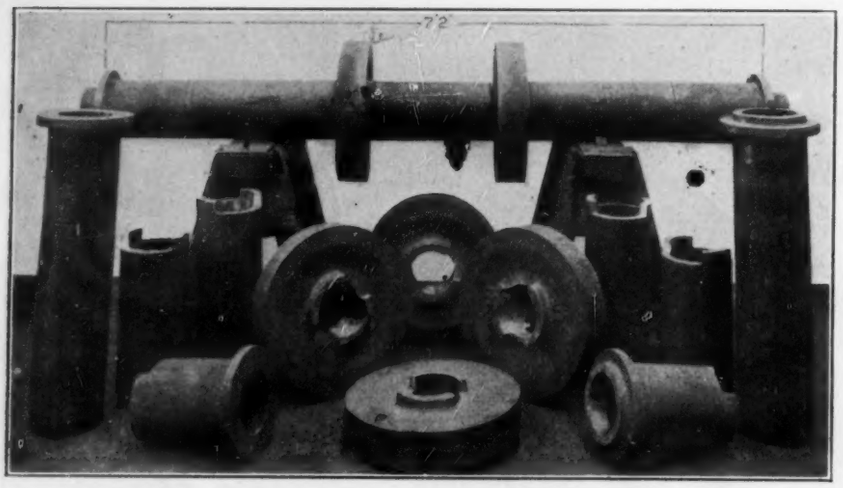


Fig. 8—Separators, disks and sleeves for bar mill furnaces made from heat-resisting steel

metals to the action of acids and of alkalies is a subject of extreme complexity. There are metals which are exceedingly prone to attack by some agencies, and yet will strongly resist the action of others. Magnesium, for instance, will disintegrate in sea water, and yet can successfully withstand the action of hydrofluoric acid, which speedily dissolves most of the other metals. In chemical plant and equipment ferrous materials largely are used because of their cheapness and their behavior toward acids and alkalies controlled either by protective coatings of special enamels or other experience has shown to be more particularly capable of resisting the specific action of the reagents or gases to which they may be exposed.

No general rule can be given as to the use of iron and steel alloys applicable to all purposes despite the research work that has been done in special cases. The problems to be solved differ entirely from those which are encountered in regard to the corrosion of metals under normal conditions. The so-called acceleration tests, in which the metals are subjected directly to the action of the reagent, do not provide an entirely satisfactory method of ascertaining their behavior.

Apart from the question of the production of ferrous materials, which will maintain their tensile strength at the high temperatures employed in modern power production in the sense of neither elongating, creeping, sagging, warping nor otherwise becoming dangerously deformed, the problems involved largely are those of corrosion. A material used for high-temperature applications should have nonscaling properties, that is, at the exposed temperatures it must have a high resistance to the oxidizing influences of atmospheric air, and the resulting formation of scale. In addition, it must withstand the equally corrosive, although not necessarily oxidizing, influences of high-temperature fluids, which often are contaminated with salines that enhance their chemical reactivity; and of high-temperature and high-pressure vapors; by-products of combustion; and of eroding gases, formed in oil engines using low-grade oils and in the internal combustion gas engines of modern engineering practice.

In boiler practice many of the same difficulties are encountered as already have been discussed under industrial heating in metallurgical and other furnaces. They occur chiefly in regard to fire bars, grates and the elements of mechanical stokers, and in the headers and tubes of multitubular boilers and preheaters and economizers.

In an important boiler installation in the north of England, considerable trouble was experienced in obtaining a suitable material for the links of

Fig. 9—Carbonizing boxes designed to withstand prolonged heatings at high temperature without scaling

the mechanical appliances which pass through the grate for the purpose of removing clinkers. Preheated air is used in the firing of the boiler furnaces, and the temperature under which the links operate is extremely high. Measurements by the optical pyrometer on the walls of the furnace and bed of the clinker in which the links work, gave readings as high as 1600 degrees Cent. While the links, are only in the furnace during a part of their travel circuit, they probably do not reach such high temperature, but there is every indication that the actual operating temperature is extremely high. In view of these circumstances and the heavy abrasive action, it is not surprising that links of cast iron only last an average of six days before requiring renewal. Various other materials were tried but without much success until finally links of special alloy steel were given a trial and proved their value for such a purpose. This material has now been adopted and has given every satisfaction, registering an average life of over 1000 steaming hours.

The broad problem of corrosion at normal atmospheric temperatures is one that involves an enormous number of variable factors, of which one of the most important is the length of time during which a material is subject to the corroding influences. It is this which tends to vitiate to a certain extent the value of acceleration tests in which this factor is lacking. It is impossible, within the compass of the present article, to deal with anything more than the comparatively restricted subject of the non-corroding materials used in circumstances in which they are exposed to high temperatures and pressures and are therefore especially liable to the intensive corroding influences of chemical attack and physical cutting and abrasion to which the term, erosion, is more particularly applied.

Such circumstances frequently occur in automobile and in aeronautical engineering, when parts of machinery are liable to become strongly heated have to stand heavy stresses which frequently are of an alternating nature and often are accompanied by sudden shocks necessitating a high impact resistance in the material.

Within reasonable limits, a certain special valve steel answers this description. It is nonscaling at high temperatures, and is readily machineable, in which condition it possesses sufficient hardness to operate successfully as a valve material without further treatment. Valves of this special steel have given entire satisfaction when used in water or air cooled aircraft engines and for automobile and high-duty steam engine purposes.

In steam turbine practice the material used for blading must possess exceptional properties of resistance to fatigue under severe rotational and torsional stresses. At the same time, its strength at high temperatures, must be retained and a smooth and perfectly polished surface maintained under the severely eroding action of high-pressure steam which often contaminated with sea salt and other saline matters.

Awards Research Fund

Dr. V. N. Krivobok, associate in the bureau of metallurgical research of Carnegie Institute of Technology, has been awarded a grant of $500 by the Iron and Steel institute of Great Britain to assist him in carrying out a photomicroscopic study of recrystallization of metals after cold working. Public announcement of the award, which comes from the Carnegie Research Fund of the institute, was made at the annual meeting of the institute in London, June 3-4. Dr. Krivobok has been a member of the staff of the bureau of metallurgical research bureau of Carnegie Institute of Technology since its organization by President Thomas S. Baker two years ago.

Large Uses of Steel—Ventilators

(*Concluded from Page 8*)

cadmium coated after forming, to be rust and acid resistant. Bracing the collar top and the circular part of the ventilator top are steel angles, bent into a circle by a press curving about one foot at a time.

The louvres rides on ¼ to ½-inch steel rods, resting in steel angles on the outside of the sheet body of the ventilator top. The lower edges of the louvres are bent around rods of similar size and these joined with a perpendicular rod so that their action is simultaneous. The number of louvres or dampers ranges from two to five. In the center of the bushing, and extending from 3 to 6 inches into the top and collar is a steel pipe, of extra heavy weight and ¼ to 1-inch in diameter. Through this runs a galvanized or copper chain for controlling the louvres. The chain runs through two pulleys to the bottom of the top louvre. Large rotary ventilators have two open positions and small sizes one. In pulling the control chain one notch further in either case releases the louvres allowing them to shut.

Fig. 10—Soot blower tubes and fittings manufactured from steel of heat-resisting quality

Sheets in these rotary ventilators are fabricated with double seam joints and rivets. A power brake is used for crimping, with different dies for the various sizes and types. Angles are notched out, heated in a forge and bent after which they are welded and cadmium treated. On sizes under 24 inches in diameter the angle braces are stamped out of steel. Counterweights are bolted on the backs of the ventilators to balance the larger front and make rotation easier.

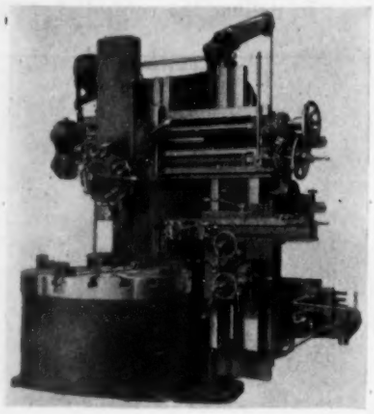
The vanes are cut out of sheet steel, the bottoms bent and drilled, and then braces are fitted to the sides. Vanes are placed inside the ventilators for shipping and are assembled by the buyer by bolting the braces and bottom of the vane to the top of the ventilators.

Other rotary ventilators employ various types of fabrication. In some the rotating unit consists of an iron rod pointed to fit a socket.

Improves Vertical Turret Lathe

No. 102

Bullard Machine Tool Co., Bridgeport, Conn., has effected several changes and improvements in the complete line of vertical turret lathes which it manufactures. The bed casting has been strengthened and machined pads now are provided on the bed for support of a forming attachment bracket for the side head. This forming attachment is of two types, namely, the plate type for crowning pulleys and machining of other similar contours and the universal type which may be set to cover a wide range of angles as required in machining bevel gears. Another improvement is that material specifications have been changed to include a cast steel main slide and all-steel turret and side head slide. Pressure oil gun lubrication has been adopted for all bearings in external units not having a fixed relation to the bed, and therefore not reached by oil from the constant flow system or other unit reservoirs. When the conditions demand, a cutting lubricant system can be supplied.



Crane Truck Employs Lift Magnet

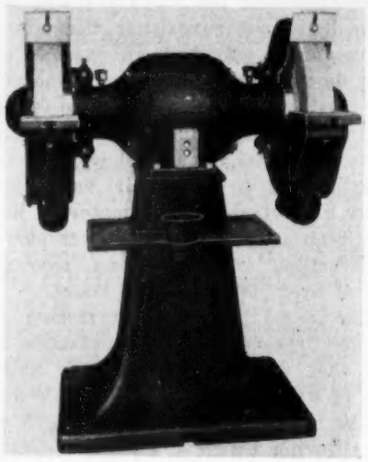
No. 103

Baker-Raulang Co., West Eightieth street, Cleveland, has perfected a small crane truck, for picking up loose castings from the floor of a freight car by means of a magnet and loading these castings into skid boxes. The crane has a capacity of 1000 pounds at a 40-inch radius. The truck wheelbase is 40 inches and the tread 30 inches. All four wheels steer, making operation flexible. Power for operating the travel and hoisting motors as well as the magnet is supplied by a gas-electric unit manufactured by the Ready-Power Co., Detroit. This unit consists of a compound-wound generator with a maximum output of 250 amperes at 30 volts, belted to a 4-cylinder gasoline engine running at 1000 revolutions per minute. The magnet was manufactured by the Ohio Electric & Controller Co., Cleveland.

Floor Grinder Does General Work

No. 104

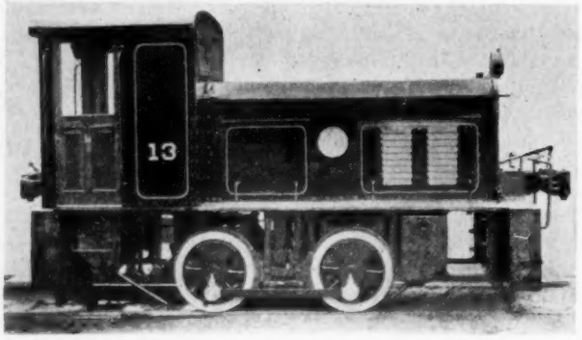
Cincinnati Electrical Tool Co., Madison and Edwards roads, Cincinnati, recently has added to its line of portable electric drills, grinders and buffers new 2 and 3-horsepower, fully-enclosed heavy-duty grinders suitable for all kinds of general grinding. The ball bearings are mounted in dust-proof housings and locked to the shaft to take up end thrust and eliminate shaft wear. Wheel flanges and nuts are machined to obtain the correct balance with the spindle which is turned and ground to size. Wheel guards are of the exhaust type and are adjustable to the ear of the wheels. Removable covers bolted to the guard completely enclose the side of the wheel, insuring maximum safety. The 2-horsepower machine is equipped to carry 12 x 2 x 1¼-inch wheels and the 3-horsepower size, 14 x 2 x 1¼-inch wheels. The grinders can be supplied for either alternating current at 220 or 440 volts, 25 or 60 cycle, 2 or 3 phase, or direct current at 115 or 230 volts.

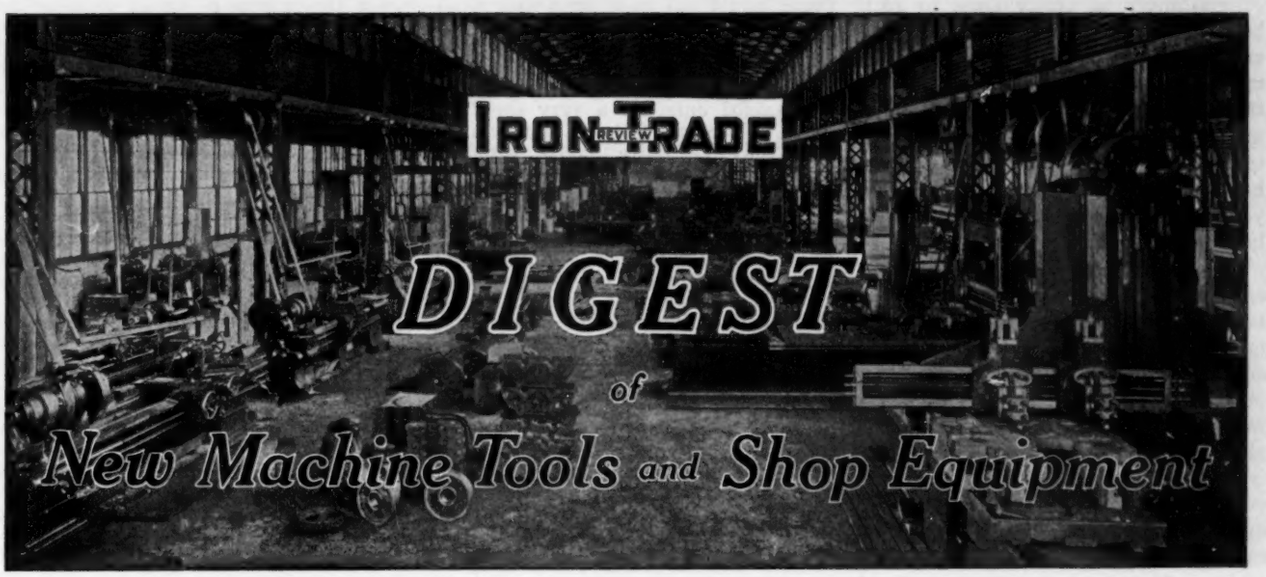


Modifies Plant Locomotive Design

No. 105

Vulcan Iron Works, Wilkes-Barre, Pa., announces that it is now prepared to furnish its gasoline locomotives in all sizes from 8 tons up equipped with elliptic springs and cross equalizers, giving three-point suspension of the chassis. With this design, derailments are rare inasmuch as the weight of the locomotive always is equalized on all bearings regardless of unevenness or irregularities in the track. Three-point suspension is standard practice on all steam locomotives. Electric locomotives built by this company are of this design as have been gasoline units in sizes from 16 tons up. The locomotive frames are of cast steel and are of the open-bar type. For shifting railroad cars on standard gage track the units are equipped with automatic couplers with spring buffers with a draft rigging arrangement in the bumpers. The wheels have steel tires and the wheel bases are comparatively short.





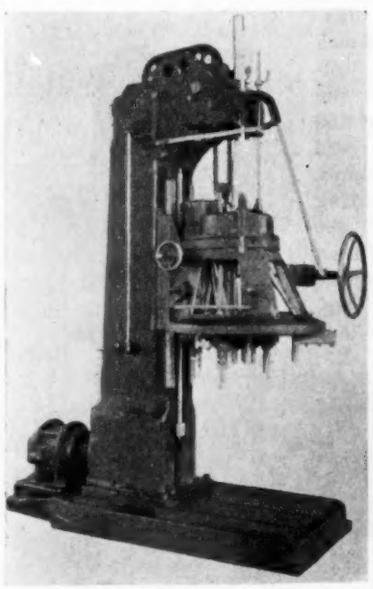
Need Market Analysis for Tools

SINCE the war, the machine tool building industry has passed through one of the most critical periods of its history. During the period of the European conflict, this industry was operating at peak capacity and was quite unable to supply the demand for shop equipment. Then came the armistice and, although machinery for war purposes was no longer needed, considerable time was required for orders in hand to be filled. Following that for a brief period, all industry was revamping itself for peace-time operation and this provided a fair market for machine tools. Next came the depression of 1921 when even the production of our basic commodities fell to historical low points and along with it all went the production

Develops Multiple Spindle Drill

No. 106

Baush Machine Tool Co., Springfield, Mass., announces the design of a high-speed multiple drill with center feed. The machine is furnished with round or rectangular heads which can be arranged for from 12 to 32 spindles, according to the size of head. Capacity of the unit is eight 1-inch drills in cast iron or their equivalent. Power is transmitted from the horizontal drive shaft through bevel gears to a vertical shaft to the head and thence through a 3-speed gear box to the spindles.

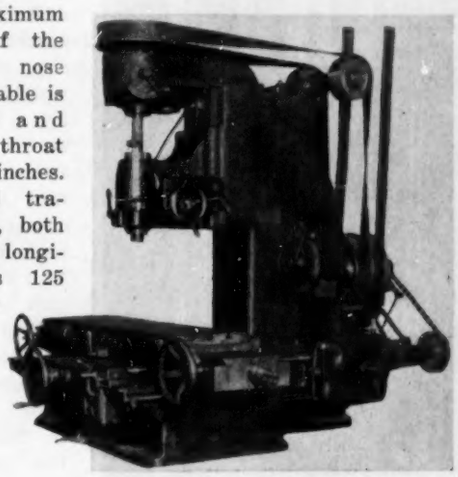


The head is equipped with back gears giving a reduction of 3.1 to 1 on the round head and 2.6 to 1 on the rectangular head. Control is from the front by means of a handlever and handwheel. The machine can be arranged for tapping, counterboring or spot facing. Three changes of speed are available through sliding gears.

Die Sinker Capacity Made Larger

No. 107

Reed-Prentice Co., Worcester, Mass., is placing on the market a new and improved model of its No. 6 die sinker or vertical milling machine. The increase in size and weight of drop forge die blocks and similar large work adapted for vertical milling was responsible for the introduction of a unit with sufficient capacity to accommodate it. Principal features of the previous machine have been incorporated in the new. Adjustment of the head on the column is 18 inches and adjustment of the spindle is 10⅞ inches. The working table is 72 inches long and 20 inches wide and has a longitudinal travel of 72 inches and a cross travel of 30 inches. Maximum distance of the spindle nose from the table is 30 inches and depth of throat is 28½ inches. The rapid traverse feed, both cross and longitudinal, is 125 inches per minute.



of machinery to pretty close to rock bottom. The majority of tool builders during the war period had built up resources sufficient to carry them through this storm and to that alone many of them owe their existence today. The climb back to prosperity has been exceedingly slow for the yearly business cycle fluctuates sharply from high to low.

Because of the great expansion of capacity during the war, the tool builders are able to build considerable more equipment than industry can absorb at present. This presents a problem in itself but another of equal importance is that of stabilizing demand, which now fluctuates so sharply that operations can not be charted very far ahead. This matter of studying marketing conditions was discussed at some length in the monthly review of economic conditions affecting the machine tool industry prepared for the National Machine Tool Builders' association by E. F. duBrul, general manager of the organization. A portion of what Mr. duBrul had to say on this subject is as follows:

"General manufacturing conditions necessarily fluctuate more than retail trade conditions. Just at the present time, while retail trade is maintaining a very high volume, there must have been more excess of production or there would not have been any weakening of commodity prices. It seems that demand for goods has not quite caught up to the production capacity, and that capacity production can be maintained only for a very short period, this being followed by relapses that may be quite sharp, although they will probably be short.

"Demand for machine tools is naturally more variable than the demand for products of the tool, so that relatively small recessions in general demand create relatively large recessions in machine tool demand; and of course on a rising tide the reverse is true. We naturally seek to know what the machine tool industry can do to minimize its own fluctuations. The industry's problem is not one of production—it is a problem of marketing. Many industries have not studied marketing problems with the same intensity that has been applied to production problems. But isn't it time to do this in the machine tool industry?

Need of Market Analysis

"At various times we have stressed the need of market analysis. Most machine tool builders do not sell direct to the user, and therefore some have thought that analysis of markets is not any part of their job as producers. However, this marketing situation does not relieve the manufacturer of the necessity of studying his real market, to which the dealer is merely the channel.

"In other lines, the marketing process is still longer, and the goods pass through more hands than is the case with machine tools. But even in such cases manufacturers have learned to benefit by market analysis. Such analysis helps them to render effective advertising assistance to the distributors who actually handle their product. It gives more intelligent bases for planning production and sales effort.

"New tools of high production capacity require selling through intelligent sales engineering. Therefore, merchandising ability becomes fully as important as producing or designing ability. The better merchant will sell more tools of the same character than the poorer merchant will sell.

"Good merchandising policy can consciously aim at analysis of conditions in user's shops that would show wherein the new tools would pay adequate returns. To do this requires a sales organization that knows production, and can sell production. The builder who has the best sales organization of that type is bound to sell more machines than one who has no such organization. The dealer who has such an organization is bound to furnish a better outlet than one whose salesmen are mere walking price lists."

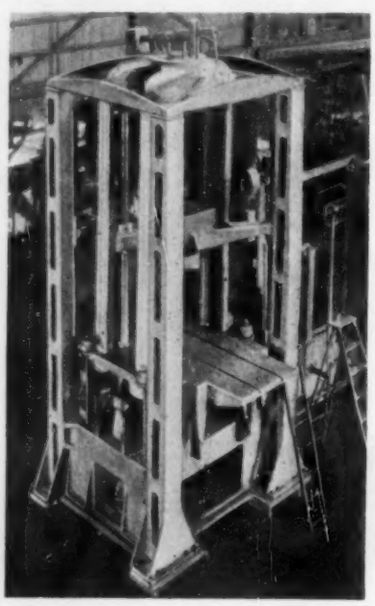
For the past two months, namely April and May, sales of machine tool equipment have been light and gave every indication that the usual summer decline had set in. This has not proved to be the exact case, for

(*Concluded on Page* 51)

Builds New Type Testing Machine

ITR No. 108

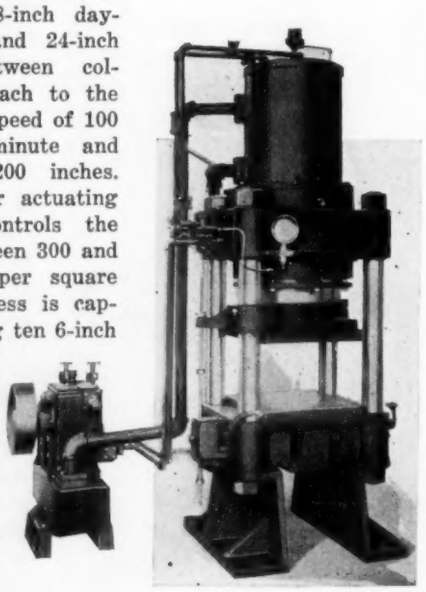
Riehle Bros. Testing Machine Co., 1424 North Ninth street, Philadelphia, is introducing a new line of universal, vertical screw power testing machines of the three rotating reversed-screw type. This latter feature has been retained from previous models so that no part of the machine projects below the base line. By the use of three pulling screws it is claimed to be impossible to load the equipment so that each screw does not carry its share of the load. A single screw has been placed on the center line of the machine towards the front or weighing beam and the other two screws are spaced equidistant from the center line at the back of the apparatus. The unit has been built in sizes up to 1,000,000 pounds. The specimen always is in full view of the operator.



Hot Presses Bearings with Power

ITR No. 109

The Oilgear Co., 655 Park street, Milwaukee, has developed a hydraulic press for hot pressing bearings. Heating of bearing metals for casting frequently changes the analysis of the finished bearing from the virgin stock. By hot pressing, as developed by the Hydraulic Pressed Bearing Co., Niles, Mich., the temperature is held low enough to leave the metal unaffected. The press has a capacity of 200 tons. It is of the 4-column speed type with a 6-inch stroke, an 18-inch daylight space and 24-inch clearance between columns. Approach to the work is at a speed of 100 inches per minute and the return 200 inches. The pump for actuating the press controls the pressure between 300 and 1000 pounds per square inch. The press is capable of making ten 6-inch strokes of 200 tons tons per minute. To allow cooling, it will hold the maximum pressure without variation indefinitely.



Editorials

Corporation Ratio Still Declines

THE declining ratio of production of the United States Steel Corp. as compared with the total output of the country again was demonstrated in 1925. A comparison of the corporation's annual report with official production statistics of pig iron, steel ingot and finished rolled materials recently issued by the American Iron and Steel institute shows independent interests continue to absorb an increasing share of the nation's output.

In 1925 the corporation produced 40.3 per cent of the country's pig iron. The same ratio held in 1924 but in 1923 it was 41.5 and in 1922, 43.8 per cent. Ten years ago, or in 1915, the percentage was 45.6. Steel ingots made by the corporation in 1925 represented 42.2 per cent of the total, as compared with 44 in 1924, 46.8 in 1923 and 46.3 in 1922. The proportion was 52.3 per cent in 1915. For finished rolled materials, the showing was about the same. Of the country's total last year, the corporation supplied 39.8 per cent. The figure was 41.8 for 1924, 43.9 for 1923 and 44.4 for 1922. Ten years ago, the ratio was 48.3 per cent.

Of the steel rail tonnage in 1925, the corporation produced 54.5 per cent, as against 57.3 per cent the previous year. Plates and sheets declined from 33.3 to 31.3 per cent and heavy structural shapes from 36.3 to 32.5 per cent. Practically the only single classification to show improvement last year was tubing and pipe which rose from 44.2 in 1924 to 47 per cent.

Reflects World Progress in Industry

IN A RECENT issue of *The B. H. P. Recreation News,* published in Melbourne, Australia, for employes of the Broken Hill Proprietary Co., the editor refers to the 8000 readers of that journal. We in the United States are inclined to consider the industrial employe magazine as an American institution, developed mainly by employers in this country.

Ever since Charles Dickens discovered the first paper of that sort in the United States the number has steadily increased, to several thousand today, and they have become so important that they have been studied and surveyed and made the subject of many articles and books. Yet, on the other side of the world, "in the land of bush rangers and sheep raising" there is an industrial publication with a circulation that dwarfs the majority of those in the United States. It has a picturesque cover in colors; its pages are about 9 x 11 inches; each issue contains 18 pages; it is well illustrated and well written.

Evidently, the employe magazine idea has gone "round the world," as such magazines are published in Europe and Asia, South America, and other countries. Is there any other manifestation that so well reflects the industrial "spirit of the times?"

While reading *The B. H. P. Recreation Review* we recalled that it was the American engineer, David Baker, who about 12 years ago went to Australia to build the Broken Hill company's steel plant. American engineers have built plants in many other corners of the world. Who knows but that it has been due to their thought, influence and initiative that employes' magazines have sprung up, in the interests of sympathy and enlightenment between workers and employers? We have not given them credit for that.

San Francisco Does "the Impossible"

IN THE last five years there have been erected in San Francisco more than 20,000 buildings on the American plan of employment. Scores of the finest structures including office and bank buildings, hotels, apartment houses, schools, churches, a newspaper plant, and a magnificent Palace of the Legion of Honor have been built under open shop conditions. The aggregate cost of all these exceeds $200,000,000.

"Graphic Proof," issued by the Industrial Association of San Francisco, is a refutation of the statement frequently made five years ago that it would be impossible to put up a large building there without closed union shop domination. The association, supported by public opinion, has accomplished "the impossible," and it will receive commendation from public spirited citizens everywhere.

Why applaud the record? Those who know about labor conditions, and who are not prejudiced in favor of union labor, will agree that the unions in the building trades in the large centers of population are guilty of more abuse of the privilege of organization than any other similar group. More public dissatisfaction and strife are caused by them, more violence to persons and property than by any other labor monopoly. The tax on

the public's purse, represented by the difference between open shop and closed shop construction, runs into millions annually. The penalty for persistent violation of the law is not enforced, because graft and political control is part of the system.

San Francisco had enough of it. The object of erecting fine buildings, of course, is not to prove that it can be done regardless of trade unions; but when they are built despite those unions and their violent opposition, only one conclusion can be drawn, as to the reason, and the outcome.

Motor Competition Grows Intense

RECENT price reductions in the automobile industry have called attention to the keen competition existing among important manufacturers of motor cars. Although certain producers this year apparently have not maintained all the hold they once had upon a fickle public fancy, the industry as a whole has attained new levels of output. The slack in the demand for one kind of car has been promptly taken up by that for another.

During the first five months of 1926 the production of cars and trucks totaled 2,043,000. This is a larger number than was made in any full year before 1920, and it was only slightly exceeded by the output of that year of inflation. Production during the first five months exceeded that of the corresponding period of 1925 by 15 per cent.

Despite this great showing, competition is exceedingly keen. This follows from the very nature of the industry. The materialized dream of an amazingly widespread distribution of cars has induced the upbuilding of huge productive capacities. Operating full time for a year the industry could turn out approximately 6,000,000 cars and trucks. The country's power of consumption with the addition of the export demand have made extraordinary strides but the expansion of capacity has been even more rapid. Intense competition is inevitable in these circumstances.

Cutting Distribution Costs

ONE of the many phases of sales costs is the transportation of salesmen. Where industrial companies employ upwards of a dozen salesmen, territory coverage expenses become an important factor in the distribution overhead. The increasing employment of automobiles by salesmen for business purposes brings before executives various problems. How far a company should go in providing automobiles for salesmen and to what extent it should be responsible for ensuing maintenance charges is a question which will bear profitable investigation.

In this issue of IRON TRADE REVIEW is presented a survey of this subject with reference to its application to the machine tool industry. It is demonstrated that many equipment distributors are recognizing the importance of this item in their costs of doing business. Appreciable savings have been effected by alterations in systems of compensation. Further economies are possible for both company and salesman if costs are analyzed and inefficiencies corrected. The experiences of the machine tool industry in cutting down unnecessary costs of distribution in this manner may well be helpful to other metalworking groups which are faced with the problem of transportation for large numbers of salesmen.

What Our Readers Are Thinking

Canada Does, Why Not U. S.?

To the Editor:

THE importation of pig iron, 401,806 tons coming in on the eastern coast, affects to a very great extent the market conditions for the domestic product in the eastern territory and causes considerable embarrassment to eastern Pennsylvania furnaces. We in the Buffalo district also feel it.

It is our hope that the government will place a duty sufficient to make it impossible for foreign iron to be dumped in this country. Canada has an antidumping law and this country should have one also. There is no pig iron produced in foreign countries that is necessarily required, as far as we know, by anyone in this country to make any of their products, and there is only one reason why foreign iron is being bought by consumers in the East and that is because it is cheaper than domestic iron.

In the manufacture of pig iron this country is dependent on no foreign country and the products necessary for the manufacture of pig iron are contained within the boundaries of the United States. If any industry should be protected against foreign competition and the dumping of iron in this country, the pig iron industry should be.

There are few blast furnaces in Canada and yet the Canadian government protects them fully against the importation of pig iron from the United States. At the present time they have an antidumping law and, in addition, there is a duty, I think it is $2.80 per gross ton, which gives the Canadian producers of pig iron a good protection. The result is that very little iron from the United States finds its way into Canada. Delivered prices in Canada on iron produced in Canada are about the same, or less, than the delivered prices on iron shipped from Buffalo. In other words, Canadian producers take the price quoted in Buffalo, add the duty, and figure their price delivered about the same or a little less, than the price on iron shipped from Buffalo. We, in Buffalo, cannot sell iron in Canada, for less than we would sell, or have sold, iron to consumers in this country.

ROBERT DONNER, *Vice President*
Donner Steel Co., Buffalo, N. Y.

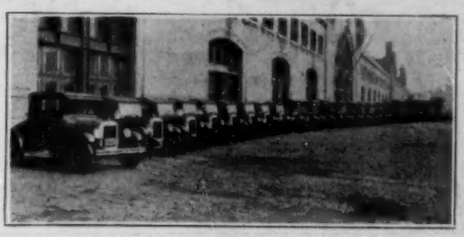
June 23, 1926.

The Reader's Page

Vol. LXXIX, No. 1 IRON TRADE REVIEW July 1, 1926

Comparing Circulation With Growth of an Industry

THOSE who participate in the preparation of a business paper naturally seek to determine if their publication is growing in circulation and prestige, in keeping with expansion in the industry it serves. Therefore, it is of interest to note that American steel output in 1925 was 60 per cent larger than the average for the five years, 1911 to 1915, just prior to the "bulge" due to the war influence. The increase in production of finished rolled steel was 50 per cent. The official figures for 1925 having been issued recently, the percentages are authentic, and therefore may be used as a basis for further comparisons. The steel averages for prewar years are used to compensate for yearly fluctuations. Over the same period of time, the circulation of IRON TRADE REVIEW shows an increase of 140 per cent. This is considerably more than the gain made in steel output.



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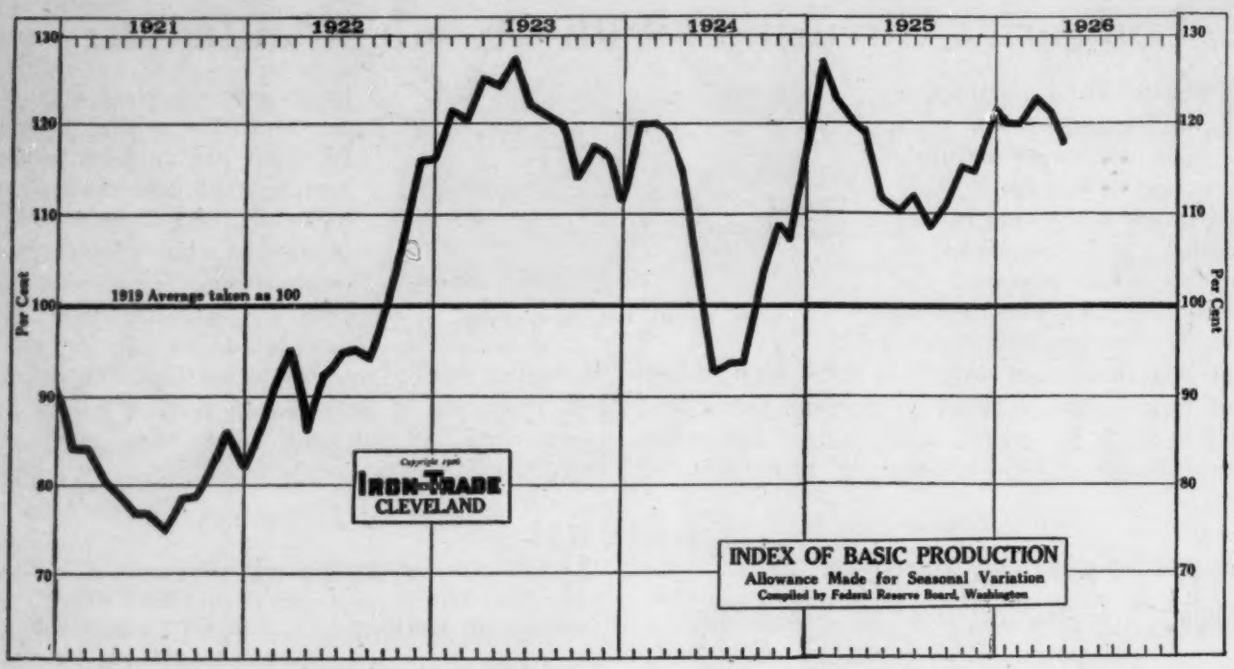
The Business Trend



Business At Half Way of 1926

By JOHN W. HILL, Financial Editor

WITH business at the half mile post of the year, it is natural to indulge in both a forward and backward glance. As the eye takes in the records of the first six months the features which appear most striking are the extremely mild recession that has taken place so far, and the continued high level of activities. The gains in the steel industry and the impressive buying of pig iron are highlights of the moment.

THESE facts are amply demonstrated by the accompanying diagram showing the curve of production in basic industries. The index, compiled by the federal reserve board, continues at 119 per cent of the 1919 average. It has fallen 6 points from the year's peak. In May, 1925 the index had fallen 16 points from the earlier peak of that year.

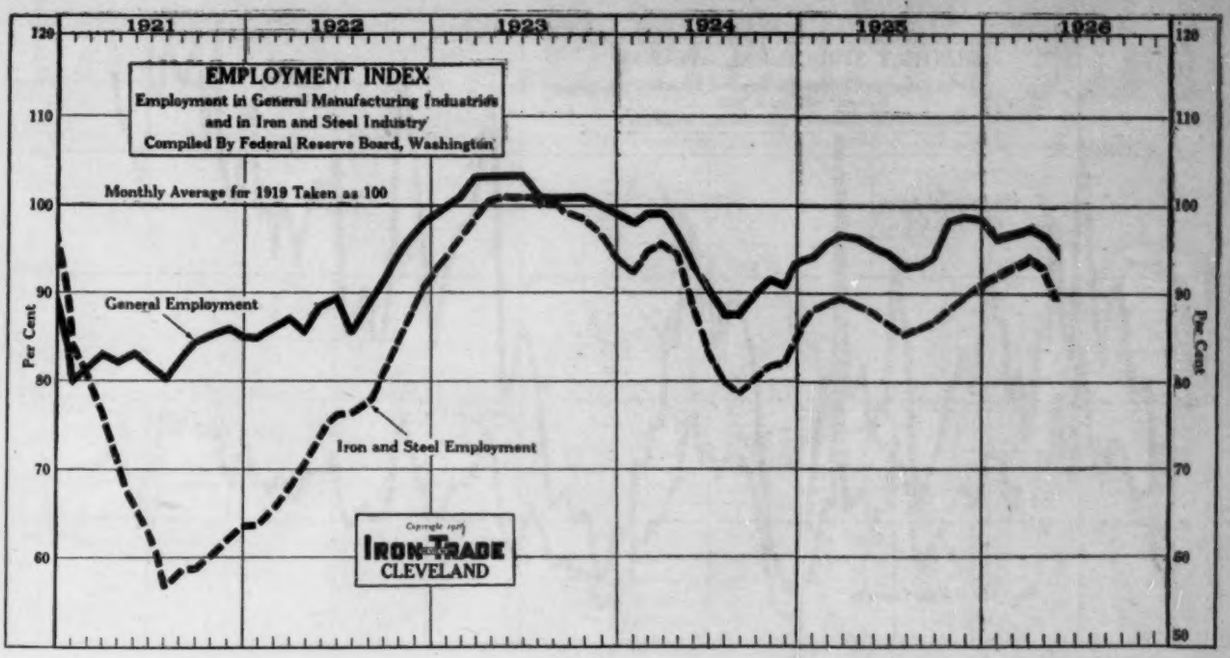
BUSINESS this year has held its ground better than expected. Pessimism was most marked during the stock market debacle in the early spring. But with the righting of the stock market, there has come wider recognition of some of the points of basic soundness in industry and in finance.

ONE of these constructive factors is the extraordinary abundance of credit. Another is the lack of generally heavy accumulations of inventories due to the long practiced policy of conservatism and hand to mouth buying. With ample credit and with no general condition of top-heavy inventories a severe extended period of enforced liquidation is precluded.

THE actual pace of trade and industry during the last half will depend upon a number of developments. Conditions in agriculture, in building construction, and in the fall political campaign will have much to do with the situation and with sentiment. Just now there is much political discontent among the farmers. Grain prices are low, although this is largely offset by the highest prices for hogs in six years.

THE building industry has maintained surprising volumes of activity during the year to date. There has been some gradual recession, but large projects continue to appear. All in all business is entering the last half with the worst of recent fears erased, and sober conservative confidence is justified while conditions remain sound.

The Business Trend

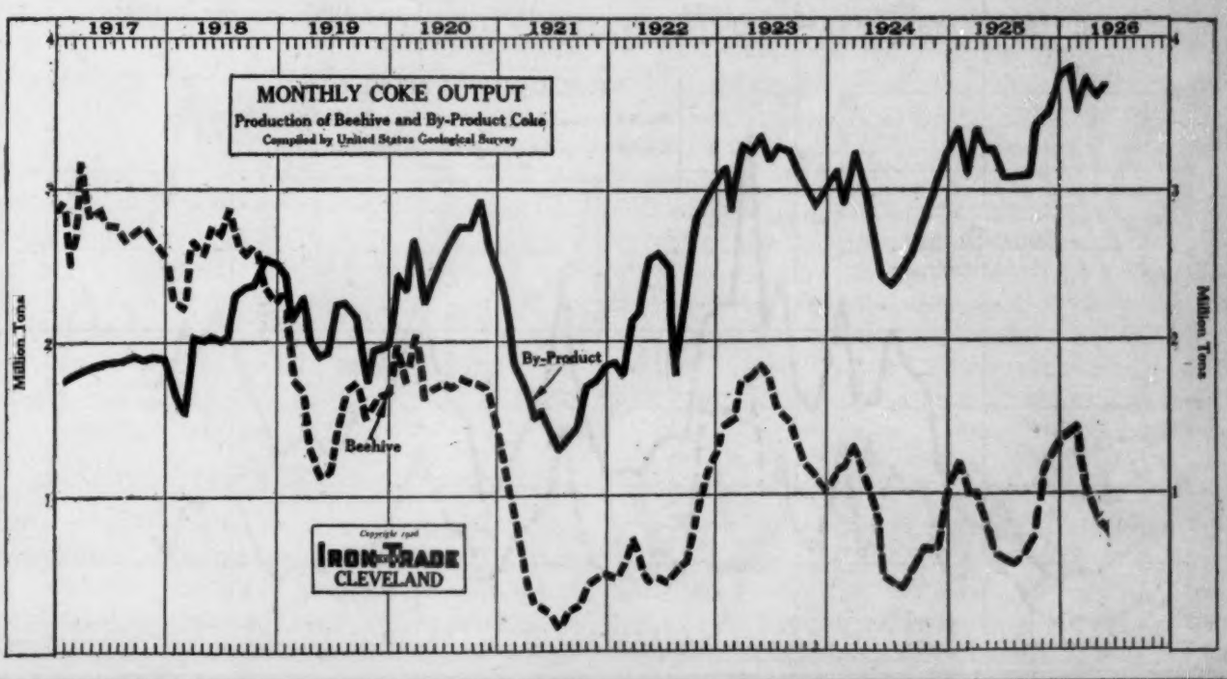


Employment Index

EMPLOYMENT in the iron and steel industries reflected the relaxation which appeared in the trade during May. According to the Federal Reserve Board Index, employment receded to the lowest point since October, 1925. It stood at 89.5 of the 1919 average compared with 94 per cent in April and 87 per cent in May, 1925. The total employment declined to the lowest point since August, 1925. The index stood at 95 per cent of the 1919 average compared with 96 per cent one month before.

Coke Output

THE production of by-product coke for May totaled 3,722,000 net tons compared with 3,602,000 tons in April. The apparent increase of 3 per cent was due to the fact that the month was longer by one day. The daily average rate of output showed no change. Plants operated at about 88 per cent of capacity. Beehive coke production continues to decline. Its total was 884,000 tons in May or a decline of nearly 10 per cent during the month. By-product plants produced 81 per cent of all coke made.



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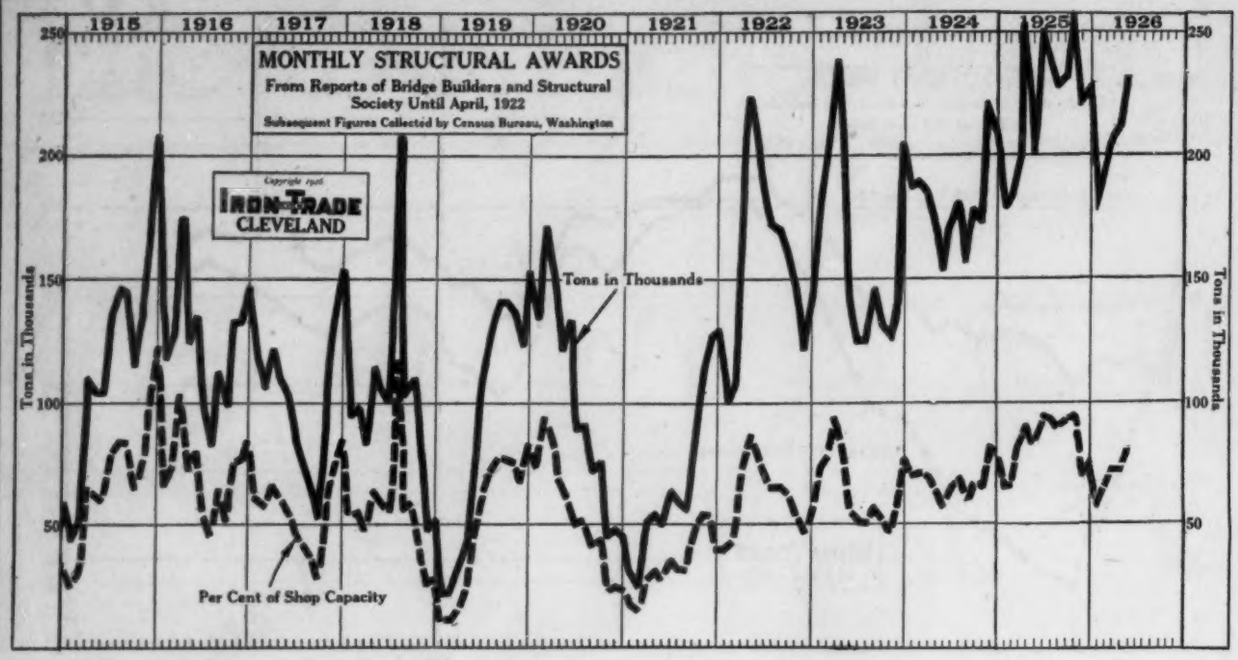
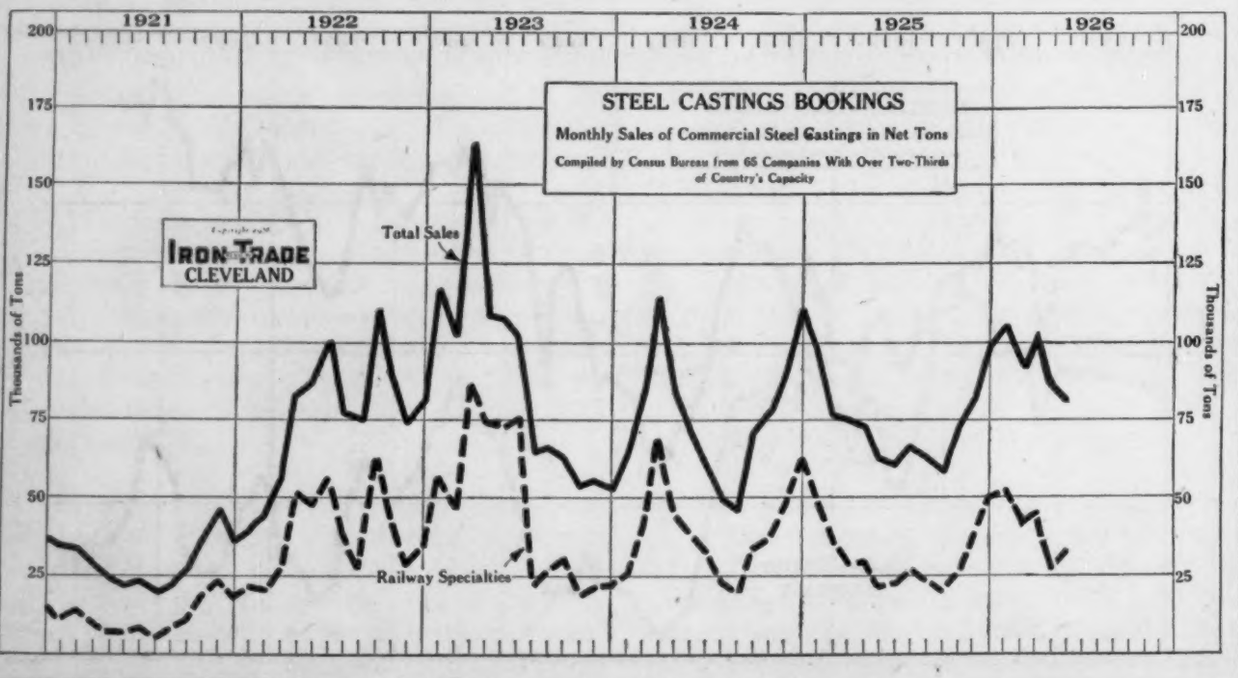


Structural Awards

REPORTS from 180 structural steel fabricating companies to the Department of Commerce indicates that the steel bookings for the entire country for May totaled 234,850 tons. This was the highest total since August, when 270,450 tons of structural steel were booked. Awards in May were 77 per cent of capacity compared with 68 per cent for the corresponding month of 1925. The record of these bookings is tangible evidence of the continued large scale of activities in the construction industry.

Steel Castings

BOOKINGS of steel castings during May as reported to the Department of Commerce by leading manufacturers was 60 per cent of the shop capacity against 66 per cent in April and 51 per cent one year ago. The total tonnage for May was 79,000 tons compared with 86,826 tons in April. Railroad specialties increased, these bookings amounting to 31,318 tons against 26,700 tons in April and 29,800 tons in May, 1925. The total casting bookings for the first five months of the year were 470,000 tons.



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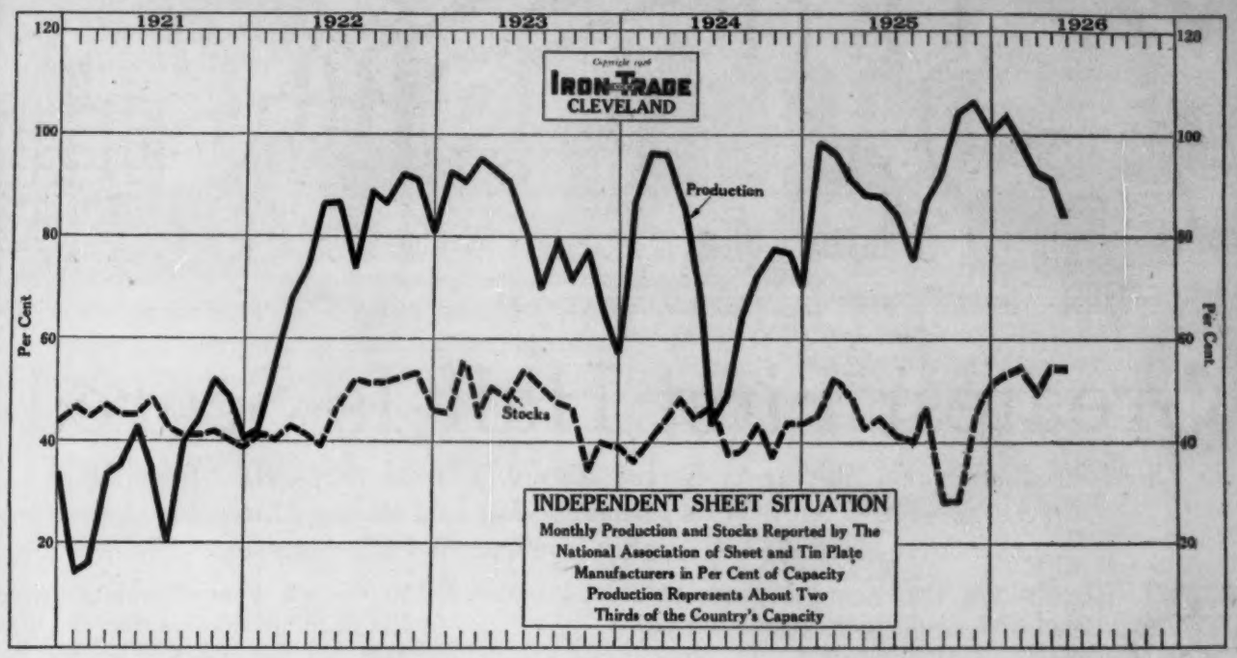
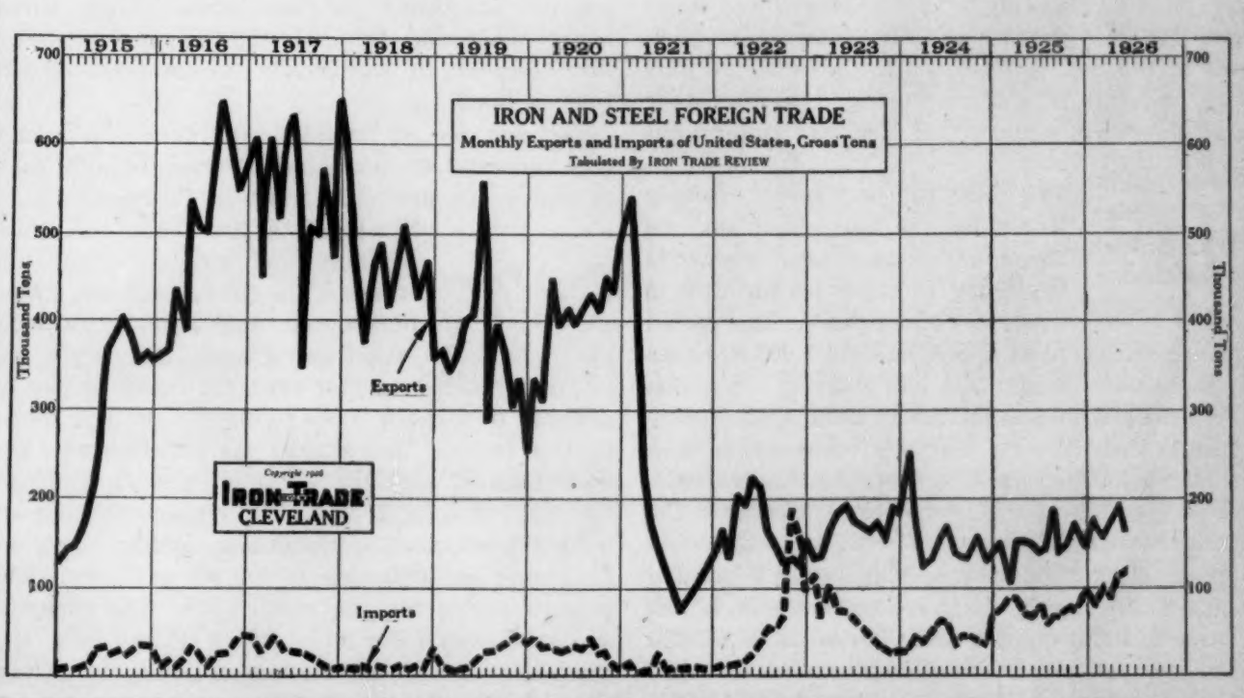


Independent Sheets

CONTINUED recession in the sales production and shipments of sheets is indicated by the May report issued by the National Association of Sheet and Tinplate Manufacturers. The sales of May were smaller than for any month since June, 1925 with the exception of February of this year. Production receded to 84 per cent of capacity compared with 91 per cent in the preceding month. Unfilled tonnage declined to 133 per cent compared with 146 per cent one month before.

Steel Foreign Trade

EXPORTS of iron and steel from the United States in May amounted to 173,418 tons. This compared with 194,449 tons in April and with 150,612 tons in May, 1925. The May rate exceeds the monthly average of the year to date. Imports during the month totaled 108,731 tons compared with 107,663 tons in April. They exceeded by a wide margin the 167,789 tons in May, 1925. Pig iron imports in May totaled 57,211 tons of which 21,419 tons came from Germany, 12,236 tons from the United Kingdom.



Greatest First Half Is Scored

Steel Production and Shipments Exceed Record Year of 1925—New Demands Are Large—Prices Show More Firmness—Pig Iron Buying Movement Greatest Since War—June Pig Iron Output Falls Slightly

HAVING achieved the greatest first half production and to all indications, enjoyed the greatest consumption for any similar period in history, the steel industry is facing the second half with a confidence that has grown steadily stronger the past month. Steel ingot production for the half year will be around 24,450,000 tons or approximately 9 per cent ahead of 1925 which was the record full year up to that time. Shipments the past six months by leading steel companies exceed 1925 by at least 5 to 10 per cent. Chicago mills moved their greatest tonnage of all products in the January-June period.

June business in steel was decidedly heavier than May, in some products as much as 50 per cent. It is not expected this expansion will be carried along in July. In fact there are some signs that in a greater measure than in the past, some of the buying has been for stocking up purposes and this now is slackening. On the other hand, new requirements for steel are coming out freely.

War Sales Rivaled

The greatest movement in pig iron since the war which has run through the past four weeks, is beginning to taper off but still is heavy. Total sales in the period now are estimated at approximately 1,200,000 tons for third quarter and last half delivery. Various sellers booked more tonnage in June than in any month in their history. Large purchases this week include 60,000 tons for the American Radiator Co. and 50,000 for the United States Radiator Co. Prices show no improvement with $18 valley still representative, though some makers are beginning to ask more and in eastern Pennsylvania $21.50 furnace is being named after liberal sales at $21. Sharp competition in New England has brought out prices which are the equivalent of $18 Buffalo and below $19.50 eastern Pennsylvania furnace.

June Output Lower

Pig iron production for the first half did not reach a record but was the best since 1923 and was about 837,000 tons or 4.4 per cent greater than in 1925. The comparative totals are 19,819,459 tons in 1926 and 18,981,883 tons in 1925. June production, with the last day estimated, was 3,201,204 tons or at a daily rate of 106,700 tons which compared with a daily average of 112,187 tons in May, a decline of 4.9 per cent. Against June 1925, it showed an increase of 521,979 tons or 19.5 per cent. A further loss of eight active blast furnaces at the end of June is revealed bringing the number to 221 or 59.4 per cent of the country's total.

Bids have been asked on three more 15,000-ton ore freighters for the lakes. With three other boats and four car ferries now pending, marine work in sight calls for at least 50,000 tons of steel.

Demand for oil tankage continues active and new inquiries of this kind involving 15,000 tons of plates appeared this week at Chicago.

Steel Prices Firmer

Steel prices are showing more firmness and stability than in weeks. The prices of 2.00c, Pittsburgh, on merchant bars and structural shapes and 1.90c on plates for third quarter now are being generally adhered to and the 1.90c figure for prompt specification on bars and shapes has disappeared. On 6000 tons of bars for the Pennsylvania railroad for third quarter 2.00c mill minimum was named by six producers, a practically similar situation developed on 1000 tons of shapes and on 15,000 tons of plates for the same buyer, the common quotation was 1.90c mill. Black sheets look better and producers report less difficulty in selling at 3.15c Pittsburgh though some lower figures

still are current in some territories.

With the lifting of the countervailing duties, German pig iron again is being offered freely in eastern markets at $20 to $21 duty paid tidewater.

Famine conditions in pig iron in Great Britain have developed due to the coal strike. Only five blast furnaces out of a total of over 200 are operating. Open-hearth steel works generally have been closed and such mills as are running are doing so largely with imported steel.

For the first time in fourteen weeks, IRON TRADE REVIEW composite of fourteen leading iron and steel products has turned upward. The week's index is $37.74. Last week it was $37.58.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 30, 1926	May, 1926	Mar., 1926	June, 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$20.76	21.01	22.76	20.76
Basic, valley	17.50	18.25	20.00	18.15
Basic, eastern del., eastern Pa.	21.75	21.75	22.20	21.50
*No. 2 foundry, del., Pittsburgh	19.76	20.76	22.26	20.11
No. 2 foundry, Chicago	21.00	21.65	23.50	20.25
*Southern, No. 2, Birmingham	21.00	22.00	22.00	19.00
*Southern Ohio, No. 2 Ironton	19.50	20.00	21.00	18.75
**No. 2X, Virginia furnace	23.00	23.00	23.25	23.00
**No. 2X, eastern del. Phila	22.76	23.01	23.26	21.51
Malleable, valley	18.00	19.00	20.50	18.50
Malleable, Chicago	21.00	21.65	23.00	20.25
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del., Pittsburgh	19.26	20.26	21.76	19.61
Ferromanganese, del., Pittsburgh	92.79	92.79	102.29	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.60	2.85	3.15	2.80
Connellsville, foundry, ovens	3.75	3.85	4.45	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.00	36.00	35.00
Sheet bars, open-hearth, Pittsburgh	36.00	36.00	36.00	35.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.00
Wire rods, Pittsburgh	45.00	45.00	45.00	45.25
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	1.95	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.22	2.27	2.22	2.32
Iron bars, Philadelphia	2.22	2.22	2.22	2.22
Iron bars, Chicago, mill	2.00	2.00	2.00	2.05
Beams, Pittsburgh	2.00	1.90	1.90	2.00
Beams, Philadelphia	2.22	2.22	2.22	2.22
Beams, Chicago	2.10	2.10	2.10	2.20
Tank plates, Pittsburgh	1.90	1.90	1.85	1.95
Tank plates, Philadelphia	2.22	2.22	2.17	2.22
Tank plates, Chicago	2.10	2.10	2.10	2.20
Sheets, black, No. 28, Pittsburgh	3.10	3.20	3.25	3.15
Sheets, blue anl., No. 10, Pittsburgh	2.30	2.45	2.50	2.30
Sheets, galvanized, No. 28, Pittsburgh	4.30	4.55	4.60	4.25
Sheets, black, No. 28, Chicago	3.35	3.40	3.50	3.40
Sheets, blue anl. No. 10, Chicago	2.55	2.65	2.65	2.50
Sheets, galvanized, No. 28, Chicago	4.55	4.65	4.75	4.50
Wire nails, Pittsburgh	2.65	2.65	2.65	2.70
Wire nails, Chicago	2.70	2.70	2.70	2.90
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	16.00	16.00	17.70	17.10
Heavy melting steel, eastern Pa.	15.25	15.25	16.20	15.65
Heavy melting steel, Chicago	13.50	12.25	14.00	15.90
No. 1 wrought, eastern Pa.	17.00	17.35	18.00	18.20
No. 1 wrought, Chicago	13.25	12.55	14.50	15.90
Rails for rolling, Chicago	16.00	14.95	16.50	18.15

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (June 30, 1926)	$37.74
Last week (June 23, 1926)	37.58
One month ago (May, 1926)	38.22
Three months ago (March, 1926)	38.88
One year ago (June, 1925)	37.60
Ten years ago (June, 1916)	39.63
Thirteen years ago (June, 1913)	26.78

Late News Flashes

Bridge To Take Large Tonnage

Chicago, June 29.—An inquiry for 9500 tons of concrete reinforcing bars has just been brought out here for a bridge at Lake Pontchartrain, New Orleans.

Steel Producer to Sell Warehouse

Cincinnati, June 29.—Negotiations for the sale of the local warehouse of Bourne-Fuller Co., Cleveland, to another independent steel company are being carried on and transfer of the property is expected to take place shortly.

Elected President of Rome Iron Mills

Philadelphia, June 29.—B. A. Clements has been elected president of Rome Iron Mills, Rome, N. Y., succeeding Edward Marshall Zehnder who was president also of the Scranton Bolt & Nut Co., and who died at his home in Scranton, June 21, aged 60.

Will Extend Clairton By-Product Works

Pittsburgh, June 29.—Six batteries of 61 by-product coke ovens each will be added to the Clairton By-Product coke works of the Carnegie Steel Co., Clairton, Pa. Contracts were awarded this week to the Koppers Co., Pittsburgh. When these units are completed the Clairton coke works of the company will include 1500 by-product ovens, thus retaining its position as the largest coking installation in the world.

Heavy Bridge Projects Planned

New York, June 29.—Two bridges between Staten Island and New Jersey will require 25,000 tons of steel. Bids on the substructures have been asked. Bids for the superstructures, involving most of the steel are expected out in August. J. A. L. Waddell, 50 Broadway, is engineer. Shops on 207th street for the board of transportation will require 4000 to 5000 tons. Section 11, route 1, state highway extension at Newark, involving viaduct and bridge work will take 1200 tons.

Orders Sale of Eastern Steel Co.

New York, June 29.—Judge Dickinson, federal district court at Philadelphia, has entered an order directing Edward L. Herndon, receiver in equity for the Eastern Steel Co. to sell at public auction the personal property of the company, including the machinery and equipment on the premises of the Warwick Iron & Steel Co., Pottstown, Pa., the property having an estimated value of $132,000 and being among considerable other assets attached by the authorities several months ago.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	44.30 to 45.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

Pittsburgh	$45.00
Cleveland	45.00
Chicago	46.00

Standard extras, $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	2.00c
Philadelphia	2.22c to 2.32c
New York	2.24c to 2.34c
Chicago	2.10c
Cleveland	2.19c
Birmingham	2.10c to 2.15c

Steel Plates

Pittsburgh	1.90c to 2.00c
Philadelphia	2.22c
New York	2.24c
Chicago	2.10c
Cleveland	2.19c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c
Pittsburgh, cold finishing	2.15c
Pittsburgh, forging quality	2.15c
Philadelphia, soft steel	2.22c to 2.42c
New York, soft steel	2.24c to 2.44c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.10c to 2.15c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.17c to 2.22c
New York, common iron	2.19c to 2.24c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh	3.65c to 3.75c
Worcester, Mass	4.05c
Chicago	4.20c

Cold Finished Steel

Cold finished steel bars, drawn or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.40c to 4.50c
3100 (Nickel chromium)	3.40c to 3.50c
6100 (Chrome vanadium)	4.25c to 4.30c
6100 (Chrome vanad. spring)	3.85c
9250 (Silico-mang. spring)	3.25c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	23.00 to 25.00
Light rails, 25 to 45 mills	34.00 to 36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c
Tie plates, Chicago	2.35c
Tie plates, Pittsburgh	2.25c to 2.35c

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra

F.o.b. Cleveland and Pittsburgh base	
Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts. $20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh, base	3.00c to 3.15c
No. 28, Philadelphia, delivered	3.32c to 3.47c
No. 28, Gary, Indiana Harbor	3.30c
No. 28, Chicago, delivered	3.35c

TIN MILL, BLACK

No. 28, Pittsburgh	3.00c to 3.15c
No. 28, Gary base	3.45c

GALVANIZED

No. 28, Pittsburgh, base	4.20c to 4.40c
No. 28, Philadelphia, delivered	4.52c to 4.72c
No. 28, Gary, Indiana Harbor	4.50c
No. 28, Chicago, delivered	4.55c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.30c to 2.40c
No. 10, Philadelphia, delivered	2.62c to 2.72c
No. 10, Gary, Indiana Harbor	2.50c
No. 10, Chicago, delivered	2.55c

AUTOMOBILE SHEETS

No. 22, Pittsburgh, base	4.20c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.85

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	68½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Additional discounts of several 5 per cents being allowed.

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$52.20 to 53.20
Six-inch to 24-inch, Chicago	48.20 to 49.20
Over 24-inch, Chicago	45.20
Four-inch, Birmingham	44.00 to 46.00
Six-inch and over, Birmingham	40.00 to 41.00
Four-inch, New York	56.50 to 57.50
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS
(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS
(⅜ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off
Stove bolts, 80, 10 and 5 off plus 2½ off in bulk.	
Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
⅛	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	28.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	70, 10 and 5 to 70 and 10 off
**Rivets, 7/16-inch and smaller, Pittsburgh Cleveland	70 and 10 to 70 and 5 off
**Rivets, 7/16-inch and smaller Chicago	70, 10 and 5 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.40 to 6.50 off
Wrought c.l., Pitts dist	6.50 to 6.55 off
Lock washers, f.o.b. factory	85 to 90 off

Pig Iron

Pig Iron Buying in June Totals About 1,200,000 Tons, Largest Movement Since War—Prices Steady

A CONTINUATION of heavy buying of pig iron during the last week of June has brought the total for the present movement over the million-ton mark. It is estimated 1,200,000 tons has been placed on furnace books since June 1, the largest amount at any one time since the war. Cleveland furnace companies during the week added approximately 225,000 tons to their previous total; they now share to the extent of about 500,000 tons in the aggregate volume; Chicago reports 200,000 tons placed. The American Radiator Co. this week purchased 60,000 tons, and the United States Radiator Co. around 50,000 tons. Sharp competition in the New England territory has brought out prices of $18, Buffalo, and below $19.50, eastern Pennsylvania.

PITTSBURGH, June 29.—A pig iron movement has been started here; it is estimated sales total 75,000 tons or more. July shipments are expected to be double or triple those of June. A large number of the sales are for 1000-ton to 4000-ton lots. Purchasers include the American Radiator Co., for its Titusville, Pa., plant; the National Radiator Co. for New Castle, United States Sanitary Mfg. Co., Iron City Sanitary Ware Co. and the Westinghouse Air Brake Co., and others. The latter purchaser divided a large tonnage between a valley stack at $18, base, valley and a Pennsylvania furnace having a 37-cent freight rate advantage. It also purchased a tonnage of malleable, as did the Fort Pitt Malleable Iron Co., at $18, valley. Some makers still are holding foundry iron at $18.50, base, but are not selling much. Others are selling through the third quarter and some through the last half at $18, base, valley, but having collected backlogs may shortly advance their price 50 cents. The American Steel Foundries is buying a few thousand tons of basic. The lowest quotation received was $17.50. Other makers are quoting $18, valley. A few small lots were bought at the latter figure. Bessemer continues to sell at $19, valley. The Vulcan Mold & Iron Co., and one or two others now are in the market.

Boston, June 29.—Buying has been heavy during the week and still continues active with prices low. Approximately 7000 tons taken by H. B. Smith Co. at Westfield, Mass., is understood to have been placed at the equivalent of $18, Buffalo, or less. Another western Massachusetts foundry took 500 tons at $18, Buffalo, equivalent or $22.91 delivered. Several other lots of 500 tons in the district were placed at the equivalent of $18.50, Buffalo. Eastern New York state furnaces have been active sellers. The McKinney Steel Co., Charlotte, N. Y., has entered the market with a strong bid for tonnage. Foreign iron has sold below $20, f.o.b. cars Boston and Providence. Signs of a strengthening market are on the horizon. At least one low seller has withdrawn quotations and a Pennsylvania furnace has advanced prices 50c.

New York, June 29.—It is estimated 40,000 tons of pig iron was purchased in this territory in the past week, of which a large portion was for shipment outside this territory. The Richardson & Boynton Co. bought 5500 tons, with 2500 tons still pending. The Essex Foundry, Newark, N. J., bought heavily. Other substantial orders were placed. Buying was accompanied by price cutting in some instances. Eastern Pennsylvania iron sold under $21, base furnace; Buffalo iron sold at $18.50 with even lower reported. German foundry again is offered freely at $20.50 to $21, duty paid, tidewater. Ind an iron is $21, base and Dutch $21.50, base.

Philadelphia, June 29.—Pig iron sales continue in fair volume. The National Radiator Co. bought 2000 tons for Trenton, N. J., and the Reading Foundry & Supply Co. purchased about 2000 tons. A textile machinery company placed some tonnage against a recent inquiry. The Krupp Foundry Co., Lansdale, Pa., also closed for some tonnage. The Westinghouse Electric & Mfg. Co. purchased 300 tons for Attica, N. Y. All of the foregoing is for third quarter. The J. L. Mott Co., Trenton, N. J., is inquiring for 1000 tons for third quarter. At least two eastern steelmakers are expected to buy basic iron this week. Although eastern foundry iron sold in some instances recently at $21, base, furnace, this price did not become general, and the market now is fairly firm at $21.50. However, eastern makers are concerned by prices done recently in New England which in some instances figured back to below $19.50, base, eastern Pennsylvania furnace. Virginia furnaces sold about 1500 tons of foundry iron in the past week at $22.50, base furnace. As the treasury department has withdrawn its announcement of a countervailing duty, German iron again is being offered, usually bringing $20.50 to $21, duty paid, but sometimes $20. Several thousand tons of domestic low phosphorous iron was sold at unchanged prices. Another shipment of English low phosphorus is to arrive shortly, but all of it has been sold.

Buffalo, June 29.—Inquiry for pig iron before Buffalo furnace operators is estimated at 25,000 to 50,000 tons, of which 10,000 tons is for local delivery. The past two weeks have been the most active of this year in this market. Buffalo furnaces are bidding for large tonnages offered by eastern consumers. None of American Radiator Co.'s order for 60,000 tons will come to Buffalo as its local needs are met by its own production. While Buffalo furnaces may have quoted as low as $19 on eastern business the local quotations are said to be un-

(*Concluded on Page* 39)

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$19.00
Bessemer, Pittsburgh	20.76
Basic, valley	17.50 to 18.00
Basic, Pittsburgh	19.26 to 19.76
Basic, Buffalo	18.50 to 19.00
Basic, del., eastern Pa.	21.75 to 22.25
Malleable, valley	18.00 to 18.50
Malleable, Pittsburgh	19.76 to 20.26
Malleable, del., Cleveland	19.50
Malleable, Chicago	21.00
Malleable, Buffalo	18.50 to 19.50
Malleable, del., eastern Pa.	22.00 to 23.00
No. IX, Eastern del., Phila.	23.26
No. IX, Buffalo	20.00 to 21.00
No. 1 foundry, Chicago	21.50
No. 2 foundry, valley	18.00 to 18.50
No. 2 foundry, Pittsburgh	19.76 to 20.26
No. 2 foundry, Buffalo	18.50 to 19.50
No. 2 foundry, Chicago	21.00
No. 2 foundry, Granite City	22.00 to 22.50
No. 2 foundry, Ironton furnace	19.50
No. 2 foundry, del., Cleveland	19.50
No. 2 foundry, del., Phila.	22.26
No. 2 foundry, N. J., tidewater	23.39
No. 2X, eastern del., Phila	22.76
No. 2X, east. N. J., tidewater	23.89
No. 2X, foundry, Buffalo furnace	19.00 to 20.00
No. 2X, eastern del., Boston	24.15 to 24.65
No. 2X, Buffalo, del., Boston	22.91 to 23.91
Continental foundry f.o.b. Boston	19.00 to 20.00
India, 2.25 to 2.75 silicon, delivered cars, Boston	20.00 to 21.00
No. 2 Alabama, Birmingham	21.00
No. 2 Alabama, Cincinnati	24.69
No. 2 Tenn., Birmingham	21.00
No. 2 Tenn., Cincinnati	24.69
No. 2 Alabama, Philadelphia	27.01
No. 2 Alabama, Chicago	27.01
No. 2 Alabama, Chicago (barge and rail)	26.18
No. 2 Alabama, Boston (rail and water)	27.91
No. 2 Alabama, Cleveland	27.01
No. 2 Alabama, St. Louis	25.42
No. 2X, Virginia, furnace	22.50 to 23.25
No. 2X, Virginia, Phila.	27.67 to 28.42
No. 2X, Virginia, Jersey City	28.04 to 28.79
No. 2X, Virginia, Boston	28.42 to 29.17
Gray forge, eastern Pa.	21.75 to 22.25
Gray forge, val. del. Pitts.	19.26
Low phos., standard, valley	27.50
Low phos., standard, Phila	24.26
Low phos., Lebanon, furnace	23.00 to 24.00
*Low phos., English (nominal)	24.01 to 24.51
Charcoal, Birmingham	30.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $24.50; 6 per cent $25.50; 7 per cent $26.50; 8 per cent $27.50; 9 per cent $29.00; 10 per cent $31.00; 11 per cent $33.00; 12 per cent $35.00; 13 per cent $37.00; and 14 per cent $39.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39.00; 14 per cent $41.00; 15 per cent $44.00; 16 per cent $46.00; 17 per cent $48.50.

*Duty paid, delivered Philadelphia consumers.

Coke

Furnaces Close for Beehive Coke Requirements Below $3—By-product Foundry Fuel Easier

ADDITIONAL contracts for beehive furnace coke have been closed, below $3. One valley consumer covered its requirements for the last half at $2.85 and is selling its own coal production, at a high equivalent price. Some foundries formerly using beehive coke are buying by-product. A 50-cent reduction has been made on the latter grade in several markets.

Pittsburgh, June 29.—One valley furnace interest, instead of converting its own coal into coke is selling its coal at a higher price equivalent, and has purchased its beehive coke requirements for last half at $2.85. This followed another valley stack's purchase of July and August requirements, also below $3. While $2.85 marks the minimum for contracts, the market is held by some makers at $3. A limited tonnage for nonmetallurgical purposes, for July shipment, brought only $2.80. Several makers disposed of surplus coke on hand, and also their anticipated surplus until July 15, at the minimum figure, $2.75, although the average price is higher. Several, however, still have a slight surplus and despite the approach of the July 4th holiday period, with an accompanying slump in production, are selling small lots at $2.60 to $2.75. The Emporium Iron Co.'s inquiry for a round tonnage is pending; otherwise blast furnace business is practically closed. Beehive foundry coke activity has slackened. An increasing number of buyers are taking by-product fuel; others are taking small lots of beehive at $4.50 to $5.50. New sales are noted $4.25. Some spot sales are bringing $3.75 to $4.

Production of coke in the Connellsville region in the week ended June 19 was 136,730 tons, against 138,610 tons in the preceding week, according to the *Connellsville Courier*.

New York, June 29.—With most consumers of coke under contract, buying in the spot market is quiet. Beehive foundry coke for prompt delivery is quotable at $4 to $5.25, Connellsville, depending on the brand. By-product foundry coke is unchanged, and present prices will continue through July.

Cincinnati, June 29.—The Ashland By-Product Coke Co., has announced a reduction of 50 cents on the foundry grade from $8 to $7.50 ovens. Prices on the domestic grades will remain unchanged for July at $5 for egg and walnut and $4.50 for No. 2 nut, ovens. The maker of by-product foundry coke at Indianapolis, Ind., has reduced the price from $10.75 to $10.25, delivered Indianapolis. Demand for by-product and beehive foundry fuel continues good, while specifications for furnace fuel have been a trifle heavier.

St. Louis, June 29.—Demand for foundry coke for prompt shipment has improved. By-product interests report a satisfactory volume of contracting for requirements through to next May 1. During the past ten days a number of small melters in the West and Southwest have come into the market, and generally in the district proper contracting is slightly larger than at this time last year. Prices remain unchanged.

Birmingham, Ala., June 28.—By-product coke plants in this district are in full operation. Comparatively few of the beehive ovens are making coke. Independent producers are selling their product steadily. Quotations are firm at $5.50 to $6 for the foundry grade. The Semet-Solvay plant at Ensley is adding a screening apparatus; the coke is to be shipped north.

Coke Prices

Beehive Ovens

Prices per net ton

Connellsville furnace	$2.60 to 3.00
Connellsville foundry	3.75 to 4.75
New River foundry	6.50 to 7.00
New River furnace	4.50 to 5.00
Wise county furnace	3.25 to 3.50
Wise county foundry	4.25 to 5.50
Alabama foundry	5.50

By-Product

Foundry, Newark, N. J.; del.	$ 9.59 to 10.75
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	10.00
Foundry, Birmingham	5.50 to 6.00
Foundry, Indianapolis, del.	10.25
Foundry, Ashland, Ky.	7.50
Foundry, Portsmouth, O.	7.50

Ferroalloys

Retroactive Cut Made in Ferromanganese Contracts—New Business $95

New York, June 29.—A reduction in the contract price of ferromanganese from $90 to $88 duty-paid tidewater, has been made by E. J. Lavino & Co. This reduction is retroactive to March 26. The producer's price on new business, however, continues $95 tidewater.

Special ferroalloys are moving in steady markets. Ferrotungsten is the only one to show a price change in the past few months, being several cents lower on account of slow buying and a drop in the ore market. Ferrovanadium and silicon alloys are being shipped in large aggregate amounts but ferrochrome is a little slow. Tungsten ores continue quiet with little change in prices, but it is reported there is a suggestion of firmness now in Chinese wolframite. Stocks still are large here. The price is $10.50 to $10.75 a short ton unit, duty paid, ordinary grade.

Pittsburgh, June 29.—Ferromanganese shipments in June will exceed May's by a fair proportion. Some users who specified their June tonnage early in the month since have had to increase specifications. No spot business is present in the market and while $95 is being held as a quotation, $88 to $90 represents the market since contracts are being billed at those figures.

Spiegeleisen consumers in this territory now are all under cover for last half. Prices are unchanged from the first half and tonnages are practically the same. Several orders for 10 to 12 per cent ferrosilicon have come in within the past two weeks and specifications on 50 per cent ferrosilicon are the largest for any month this year.

Plans New Furnaces

Birmingham, Ala., June 28.—A special meeting of stockholders of the National Cast Iron Pipe Co. has been called to capitalization and to approve issuance of further bonds for development purposes. It is understood generally that the company will build blast furnaces, by-product coke ovens and add to its pipe shops. The company now is manufacturing around 425 tons of cast iron pipe daily. At present gas fuel is being obtained from the by-product coke plant of the Alabama By-Product Corp.

Fluorspar Is Shaded

Pittsburgh, June 29.—On recent inquiries for carloads of fluorspar, $17.50 again has appeared although some sellers will not go below $18.

Curran Brass & Foundry Co., Wilmington, Del., has increased its capital from $75,000 to $275,000.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resales	$88.00 to 110.00
Ferromanganese delivered Pittsburgh	92.79 to 114.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	32.00 to 34.00
Ferrosilicon, 50 per cent freight allowed	85.00 to 87.50
Ferrotungsten standard, per pound contained	1.00 to 1.05
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent materials)	122.50

†Duty paid.

Plates

General Demand Shows Improvement—Vessel, Tank and Car Needs Figured

SOME improvement is noted in the general volume of plate tonnage in the market, and the price shows more firmness at 1.90c, Pittsburgh. Around 50,000 tons of steel, chiefly plates, is required for Great Lakes vessels now being figured. On 15,000 tons of plates for the Pennsylvania railroad bids opened this week show an almost uniform quotation of 1.90c.

PLATE PRICES, PAGE 24

Chicago, June 29.—Oil storage tankage has come back, current inquiry totaling 15,000 tons, chiefly for Texas destinations. One interest has closed on 2100 tons of tank plates. Western tank fabricators are going into midsummer with unusually heavy schedules. About 15,000 tons of finished steel chiefly plates, is required for car repairs which railroads are making in their own shops. Activity in plates at the end of the second quarter is at a lower level than at the end of the first quarter but is satisfactory for the season. One interest has plate capacity engaged well through the third quarter. The market on plates is 2.10c, Chicago, with small business commandnig 2.20c.

Boston, June 29.—Plate sales have been relatively quiet during the past week. The price is firm at 1.90c, Pittsburgh. Inquiry has improved.

Philadelphia, June 29.—The Pennsylvania railroad opened bids Monday on 15,000 tons of plates for third quarter. The Bethlehem Steel Corp., Otis Steel Co., Alan Wood Iron & Steel Co., Jones & Laughlin Steel Corp., National Enameling & Stamping Co., Carnegie Steel Co., Worth Bros. Co., Lukens Steel and Central Steel Co., bid 1.90c, base, mill. Illinois Steel Co., and Inland Steel Co. bid 2.10c, base, mill.

Pittsburgh, June 29.—An increasing number of contracts for plates are being taken by the mills for a part or all of the third quarter. The general price is 1.90c although on some small lots 2.00c is asked. The Dravo Contracting Co. is low bidder on and undoubtedly will receive the order for five steel hulls for St. Louis. The barge and towboat inquiry for the upper Mississippi river still is pending. Numerous inquiries for various forms of plate fabrication are before the trade but individual tonnages are small.

Cleveland, June 29.—Inquiries for three more 15,000-ton lake ore freighters have come out. With two boats for the Pittsburgh Steamship Co. and a special unloader still are pending and four car floats for the Wabash & Ann Arbor, approximately 50,000 tons of steel for marine work is in sight. Of 2500 to 3000 tons for Illinois Central locomotives placed with the Lima Locomotive Works, Pittsburgh mills will supply 1300 tons of tank steel and the remainder of boiler and fire box quality was split between eastern and Cleveland mills. The market shows increased firmness at 1.90c, Pittsburgh, or 2.09c, Cleveland. The general tonnage is better than a few weeks ago and holding up well.

CONTRACTS PLACED

1000 tons, five steel hulls for the United States engineers, St. Louis, to the Dravo Contracting Co.

100 tons, dredge pipe for Oakland, Calif., to Pacific Coast Engineering Co.

100 tons, penstock for Pacific Gas & Electric Co., Melones dam project, Calif., to Western Pipe & Steel Co.

Tonnage unstated, two 1,500,000-gallon storage tanks for Quebec Industrial Alcohol, Ltd., at Sorel, Que., to Horton Steel Co., Canadian subsidiary of Chicago Bridge & Iron Works.

CONTRACTS PENDING

3500 to 5000 tons, towboats and barges for the Inland Waterways Corp., upper Mississippi river; bids being taken.

1450 tons, pipe line, La Mesa, Calif.; bids opened.

300 to 400 tons, tank work for Southern Pacific Co., San Francisco; bids in July 6.

130 tons, steel tank for Los Angeles, Spec. 795-A; Western Pipe & Steel Co. low bidder.

Semifinished

Users Defer Action on Third Quarter Sheet Bars, Billets and Slabs—Market Is Steady

WHILE most buyers of semifinished material have been unable to obtain quotations below $36 on sheet bars, and $35 on standard billets and slabs, they are deferring action on their recent inquiries. A few lots for current needs are being placed at these prices. Users of forging billets are renewing contracts at $40, Pittsburgh.

SEMIFINISHED STEEL PRICES, PAGE 24

Pittsburgh, June 29.—Additional semifinished steel inquiries have been received this week. Action on some of those pending last week still is deferred. The new ones include a few for as much as 2000 tons of sheet and tin bars. So far no quotation below $36, Pittsburgh, is uncovered and that is expected to be the third quarter price. Buyers out last week for 2000 to 3000 tons of billets and slabs have been unsuccessful in locating any price below $35, but still hesitate to close. That figure apparently is general. Further progress has been made in forging billet business for next quarter and practically all customers now are protected at the $40 figure. Users of wire rods are not in any haste about signing up for third quarter needs but some of the structural shops who make their own rivets will shortly do so as will the cold finishers who use wire rod material. The price is unchanged, namely $45. Skelp is inactive at 1.90c.

Philadelphia, June 29.—Consumers generally are renewing wire rod contracts for third quarter at $45, Pittsburgh. One user is inquiring for several hundred tons of forging billets for third quarter, but generally billet buying is hand to mouth. Prices are unchanged.

Youngstown, O., June 29.—Third quarter buying of sheet bars from all indications will be on the open market basis. Consumers, including regular customers, have made no effort to get tonnage under contract at prevailing market prices. Many sheet bar consumers have been driving for a lower price on third quarter tonnage but as far as can be learned district producers have no figure below $36, Youngstown, outstanding. Practically all contract tonnage for this quarter has been specified. Prices are unchanged at $36, Youngstown, applying on small billets and spot or contract sheet bars and $35, Youngstown, on standard slabs and billets. Wire rods are quoted $45.

Cleveland, June 29.—Users of sheet bars, billets and slabs are reluctant to close for third quarter, and the volume of business is light. A local consumer placed 3000 tons of slabs, for last half, with a Cleveland maker, at $35. The market continues quotable at $36, valley, for sheet bars, and $35 for billets and slabs. A price of $36, Cleveland, is quoted by a mill interest here on sheet bars. This formerly was the custom, also in respect to billets and slabs, in meeting competitive conditions. Buffalo mills, using lake vessel transportation, have been offering material in this district during the past week.

Wire rod requirements for third quarter generally have been covered. A valley mill took three contracts recently, one for 3000 tons, one for 2500 tons and another for 1500 tons. The price is firm at $45, Cleveland.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 13.00
Boston (dealers)	10.00 to 10.50
Buffalo, No. 1	15.50 to 16.00
Buffalo, No. 2	14.75 to 15.00
Chicago	13.50 to 14.00
Cincinnati (dealers)	11.00 to 11.50
Cleveland No. 1	13.75 to 14.25
Cleveland, No. 2	13.00 to 13.50
Detroit	12.00 to 12.50
Eastern Pennsylvania	15.00 to 15.50
Bethlehem delivery	14.50
New York (dealers)	9.75 to 10.25
Pittsburgh	16.00 to 16.50
St. Louis	12.50 to 13.00
Valleys, No. 1	16.00 to 16.25

COMPRESSED SHEETS

Buffalo	14.25 to 14.75
Chicago	10.75 to 11.25
Cleveland	13.00 to 13.50
Detroit	10.25 to 10.75
Pittsburgh	14.50 to 15.00
Valleys	14.50 to 15.00

BUNDLED SHEETS

Buffalo	10.00 to 10.50
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.00 to 11.50
Eastern Pennsylvania	13.50
Pittsburgh	13.50 to 14.00
St. Louis	7.50 to 8.00

SHEET CLIPPINGS, LOOSE

Chicago	7.75 to 8.25
Cincinnati	6.50 to 7.00
Detroit	6.50 to 7.00

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	16.00 to 16.50
Chicago	16.50 to 17.00
Cincinnati (dealers)	16.00 to 16.50
Cleveland (over 6 ft.)	14.50 to 15.00
Detroit	15.00 to 15.50
St. Louis	15.50 to 16.00

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	13.00 to 13.50
Buffalo	14.75 to 15.00
Chicago (net)	13.50 to 14.00
Cincinnati (dealers) (net)	7.50 to 8.00
Cleveland	13.00 to 13.50
Detroit (net tons)	12.50 to 13.00
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.50
Pittsburgh	12.50 to 13.00
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	17.50 to 18.00
Cincinnati (dealers)	15.50 to 16.00
Eastern Pennsylvania	19.00 to 20.00
Pitts. billet and bloom crops	20.00 to 20.50
Cleveland, billet and bloom crops	17.50 to 18.00

SHOVELING STEEL

Chicago	13.00 to 13.50
Pittsburgh	12.00 to 12.50
St. Louis	12.50 to 13.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	16.00 to 16.50
Eastern Pennsylvania	17.00 to 17.50
Pittsburgh	18.50 to 19.00
St. Louis	15.00 to 15.50

FROGS, SWITCHES, GUARDS

Chicago	15.00 to 15.50
Eastern Pennsylvania	16.00 to 16.50
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	15.25 to 15.75
St. Louis	13.50 to 14.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.00 to 13.00
Boston (dealers)	13.00 to 13.50
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	15.00 to 15.50
Chicago, No. 1	13.25 to 13.75
Chicago, No. 2	13.25 to 13.50
Cincinnati, No. 1 (dealers)	8.00 to 8.50
Cleveland, No. 1	11.50 to 12.00
Eastern Pennsylvania	16.50 to 17.50
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	11.50 to 12.00
Pittsburgh, No. 2	16.00 to 16.50
St. Louis, No. 1	12.00 to 12.50
St. Louis, No. 2	12.50 to 13.00

WROUGHT PIPE

Boston (dealers)	9.50 to 10.00
Eastern Pennsylvania	14.00 to 14.50
Buffalo	15.00 to 15.50
New York (dealers)	9.75 to 10.25

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.00

BUSHELING

Buffalo	14.00 to 14.50
Chicago, No. 1	11.00 to 11.50
Chicago, No. 2	8.25 to 8.75
Cincinnati, No. 1 (dealers)	8.00 to 8.50
Cleveland, No. 1	11.50 to 12.00
Cleveland, No. 2	11.00 to 11.25
Pittsburgh, No. 1	13.50 to 14.00
St. Louis, No. 1	10.75 to 11.25

MACHINE SHOP TURNINGS

Birmingham	7.50 to 8.00
Boston (chemical)	8.00 to 8.50
Buffalo	10.00 to 10.25
Chicago	7.75 to 8.25
Cincinnati (dealers)	6.50 to 7.00
Cleveland	10.00 to 10.50
Detroit	7.00 to 7.50
Eastern Pennsylvania	13.50
New York (dealers)	9.25 to 9.75
Pittsburgh	11.00 to 11.50
St. Louis	7.00 to 7.50

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	7.50 to 8.00
Boston (chemical)	10.50 to 10.75
Boston (dealers)	8.00 to 8.50
Buffalo	11.75 to 12.25
Chicago	10.50 to 11.00
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.00 to 11.50
Detroit	8.00 to 8.50
Eastern Pennsylvania	13.50
Eastern Pennsylvania (chem.)	15.00 to 15.50
New York (dealers)	8.75 to 9.75
Pittsburgh	12.00 to 12.50
St. Louis	9.75 to 10.25
Valleys	12.50 to 13.00

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.00 to 8.50
Buffalo	11.75 to 12.25
Cincinnati (dealers)	6.50 to 7.00
Cleveland	10.00 to 10.50
Detroit	8.00 to 8.50
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	9.25 to 9.75
Pittsburgh	12.00 to 12.50

PIPES AND FLUES

Chicago (net)	8.75 to 9.25
Cincinnati (dealers)	7.00 to 7.50
St. Louis	8.50 to 9.00

RAILROAD GRATE BARS

Buffalo	13.50 to 14.00
Chicago (net)	13.00 to 13.50
Cleveland	13.50 to 13.75
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	11.00 to 11.50
St. Louis	13.50 to 14.00

FORGE FLASHINGS

Boston (dealers)	8.75 to 9.00
Buffalo	12.00 to 12.50
Chicago	9.00 to 9.50
Cleveland (under 10 in.)	11.50 to 12.00
Cleveland (over 10 in.)	11.50 to 12.00
Detroit	8.25 to 8.75
Pittsburgh	12.00 to 12.50

FORGE SCRAP

Boston (dealers)	8.50 to 9.00
Chicago	16.50 to 17.00
Eastern Pennsylvania	13.50

ARCH BARS AND TRANSOMS

Chicago (net)	19.50 to 20.00
St. Louis	20.50 to 21.00

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	8.50 to 9.00
Buffalo	13.50 to 14.00
Chicago	12.75 to 13.25
Cleveland	12.50 to 13.00
Eastern Pennsylvania	13.75 to 14.25
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (shipping point)	18.00 to 18.50
Buffalo	16.50 to 17.00
Chicago	19.25 to 19.75
Cleveland	16.00 to 16.50
Eastern Pennsylvania	22.00 to 23.00
Pittsburgh	20.00 to 20.50
St. Louis	19.25 to 19.75

SHAFTING

Boston (shipping point)	15.50 to 16.50
Chicago	19.50 to 20.00
Eastern Pennsylvania	20.00 to 21.00
New York (dealers)	17.50 to 18.00
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 16.50
Boston (consumers)	17.00 to 17.50
Buffalo, iron	16.50 to 17.00
Buffalo, steel	17.00 to 17.50
Chicago, iron	15.75 to 16.25
Chicago, steel	16.50 to 17.00
Cincinnati	11.00 to 11.50
Eastern Pennsylvania	16.50 to 17.00
New York iron (dealers)	12.50 to 13.50
Pittsburgh, iron	16.50 to 17.00
Pittsburgh, steel	18.50 to 19.00
St. Louis, iron	15.50 to 16.00
St. Louis, steel	16.50 to 17.00

NO. 1 CAST SCRAP

Birmingham, cupola	16.50 to 17.00
Boston	18.00 to 18.50
Buffalo	16.00 to 16.25
Chicago, No. 1 machinery	18.25 to 18.75
Chicago No. 1 railroad or agricultural	17.50 to 18.00
Cincinnati No. 1 Machinery cupola (net tons dealers)	17.00 to 17.50
Cleveland, cupola	16.75 to 17.25
Detroit (net tons)	14.50 to 15.00
Eastern Pennsylvania, cupola	17.50 to 18.00
New York, cupola (dealers)	14.50 to 15.00
Pittsburgh, cupola	15.50 to 16.00
San Francisco, delivered	20.00 to 21.00
Seattle	16.50
St. Louis, railroad	15.50 to 16.00
St. Louis, agricultural	16.00 to 16.50
St. Louis, machinery	18.00 to 18.50
Valleys	17.50

HEAVY CAST

Boston	15.50 to 16.00
Buffalo (breakable)	14.00 to 14.50
Cleveland	13.00 to 13.25
Detroit (Automobile) (net tons)	19.50 to 20.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	13.50 to 14.00
Pittsburgh	14.00 to 14.50

MALLEABLE

Boston, railroad	19.00 to 19.50
Buffalo	16.50 to 17.00
Chicago, agricultural	15.00 to 15.50
Chicago, railroad	17.00 to 17.50
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	13.50 to 14.00
Cleveland, agricultural	17.50 to 18.00
Cleveland, railroad	18.50 to 19.00
Detroit	14.00 to 14.50
Eastern Pennsylvania, railroad	16.00 to 16.50
Pittsburgh, railroad	16.00 to 16.50
St. Louis, agricultural	13.00 to 13.50
St. Louis, railroad	14.50 to 15.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	15.00 to 15.50
Boston (dealers)	11.00 to 11.50
Buffalo	17.00 to 17.50
Chicago	16.00 to 16.50
Cleveland	16.00 to 16.25
Eastern Pennsylvania	15.50 to 16.50
New York	13.75 to 14.25
Pittsburgh district	18.00 to 18.50
St. Louis	15.00 to 15.50

LOCOMOTIVE TIRES

Chicago, No. 1	17.50 to 18.00
Chicago, cut	17.00 to 17.50
St. Louis, No. 1	16.00 to 16.50

LOW PHOSPHORUS PUNCHINGS

Chicago	15.50 to 16.00
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh	18.50 to 19.00

Scrap

Buying Continues Small—Much Sentiment Boosting Prices While Better Trend Apparent

DEALERS in iron and steel scrap are sustaining the present market, sentiment on their part carrying prices to a higher level, albeit consumers are not willing to buy at their asking prices. Always sensitive to approaching events, scrap is showing its foreknowledge of a better situation generally. Indications are the bottom of the dip has been passed.

Chicago, June 29.—Iron and steel scrap prices continue on a level maintained largely by dealers' asking prices, but a shade of strength has been given by the offer of $14 by a consumer of melting steel. This interest, which bought steel down to $12.50 in recent weeks, has been rejecting so heavily recently that yard interests are loathe to ship. Dealers have paid $13.50 rather freely and up to $14 in instances in recent covering operations on steel. In most grades there is a spread of $1 or more between what dealers are asking and what consumers will pay, a situation contrary to that in steel. Demand for all grades except cast, which is moving moderately well, is subnormal considering the melt. Dealers are paying $10.75 to $11 for borings, while one producer sold his accumulation recently for $11.60, tracks. Turnings are a drug on the market, with the northern Indiana consumer holding up shipments. Ideas of price continue to show a wide variation, with insufficient trading in most grades to afford an accurate market.

Boston, June 29.—Further recovery is apparent in the scrap iron and steel market. Several round tonnage sales of heavy melting steel have been made, one within the district at $13.50 delivered. Prices are slightly firmer. Textile scrap has sold at $20.25 delivered.

New York, June 29.—Scrap prices continue steady, although on several grades purely nominal. Principal activity is in steel scrap, dealers buying for Conshohocken, Pa., and Coatesville, at $15, delivered, and Claymont, Del., around $15.25, delivered. On such grades as wrought, steel car wheels and cast scrap, particularly the lighter grades, trading is so light that prices are not being given a test.

Philadelphia, June 29.—Consumers have bought iron and steel scrap more freely the past week, mainly scrap grades, paying $13.50 for bundled sheets and turnings. Most activity is by dealers buying for contracts and for stocks. Dealers are paying $14.50c delivered Bethlehem for heavy melting steel and in some cases higher for other eastern Pennsylvania consuming points.

Buffalo, June 29.—Dealers are showing more confidence in scrap values and are making purchases which are holding prices firm or in some cases causing advances. Best offers for ordinary heavy melting steel are 50 cents to $1 under the $15 level which dealers say would have to be paid for any tonnage.

Cleveland, June 29.—Trading in iron and steel scrap still is limited. Consumers are not buying beyond immediate needs and inquiry is lacking.

Pittsburgh, June 29.—Scrap demand is not widespread or well sustained. Sales of heavy melting steel included one to an Ohio user at $16.50 and one to a Pittsburgh district mill at $16. Since then a mill on the Allegheny river paid $16.75 and even $17 for 500 or 1000-ton lots of high grade steel scrap, which transactions are considered outside of ordinary market channels because of the grade of steel. A sudden spurt in request for steel specialties has strengthened the price because of scarcity by at least 50 cents. This grade is quoted at $18.50 to $19 but some will not sell for less than the maximum.

Detroit, June 29.—Iron and steel scrap continues to drag, with demand weaker than since the first of the month. Dealers are doing little more than mark time. Even local consumption, while never large, is showing weakness.

Cincinnati, June 29.—With a number of mills closing early next month for repairs, movement of iron and steel scrap has declined materially. Specialties also are in less demand. Prices are nominal.

St. Louis, June 28.—Buying enthusiasm on the part of dealers continues and there has been a general advance in prices, ranging from 50 cents to $1.50 per ton. Interest, however, centers principally in steel and steel specialties, cast grades being relatively quiet, and unchanged. There is a fair demand for blast furnace material, particularly busheling, which was up 50 cents a ton to $10.75 to $11.25.

Birmingham, Ala., June 28.—Little buying of iron and steel scrap is being done beyond immediate needs. Heavy melting steel reduced to $12 did not bring about buying. No. 1 cast still holds its position in activity though no long time contracts are being made.

Sheets

Specifications Show Improvement—Prices Steady—Valley Mills Plan Week Shut Down

A BETTER tone is noted in the sheet market in the Pittsburgh district. Specifications have improved and mills are acquiring backlogs. The price of black sheets shows more firmness. New business with valley mills is slow in developing; little third quarter business has been placed. Some of the valley mills plan to shut down one week early in July.

SHEET PRICES, PAGE 24

Youngstown, June 29.—Sheet transactions continue to be conducted on the open order basis. Many buyers are reluctant to purchase their customary requirement. Consequently little third quarter business is in the hands of producers. Many of the district mills plan to shut down a week early in July. Inquiry for all grades shows no appreciable enlargement. Producers generally are quoting black sheets, No. 28 gage, 3.15c, base, but considerable tonnage has been taken by some mills at 3.10c. A good size tonnage of blue annealed is on the books in this district at 2.40c but some mills are soliciting tonnage at 2.30c. Galvanized is moving slowly. Quotations range from 4.30c to 4.40c. High-grade tonnage continues to be purchased sparingly. No large tonnage is under inquiry. The price is 4.20c for No. 22 gage.

Boston, June 29.—Demand for sheets continues dull. Prices are soft. Galvanized sheets have sold at 4.30c, Pittsburgh, and black at 3.05c to 3.15c.

Chicago, June 29.—Western sheetmakers continue to lose considerable business at the head of the lakes and along the Ohio and Mississippi rivers to eastern mills, it being apparent that 3.00c, Pittsburgh, on black for example, is commonly done in these districts. In and near Chicago the price structure is stronger than in outlying districts. Specifications with one western maker last week were the best for any week in 90 days, with emphasis upon the lighter gages. Early fall demand is expected to develop in 30 days. Delivered Chicago prices approximate 3.35c for black, 4.55c for galvanized and 2.55c for blue annealed. Some makers look for a decided strengthening in these levels by the end of this week. It is reported the leading interest will not

formally announce any third quarter prices, preferring to await more stable conditions.

Philadelphia, June 29.—Some contracting for sheets is noted, but buyers generally are not disposed to cover for the third quarter. Consumption is good, and eastern mills are getting enough business to maintain production around 70 per cent. The market is quotable at 2.30c to 2.40c, Pittsburgh, for blue annealed; 3.00c to 3.15c for black and 4.25c to 4.30c for galvanized.

The following bids were received on 500 tons of blue annealed, black and galvanized sheets: Bethlehem Steel Corp., 2.685c, 3.435c and 4.685c, Sparrows Point, freight allowed to Altoona, Pa.; United Alloy Steel Corp., 2.40c, 3.15c and 4.30c; American Sheet & Tin Plate Co., 2.30c, 3.15c and 4.30c; Weirton Steel Co., 2.40c, 3.10c and 4.30c; National Enameling & Stamping Co., 2.55c, 3.35c and 4.50c; Wheeling Steel Corp., 2.40c, 3.15c and 4.30c; Youngstown Sheet & Tube Co., 2.40c, 3.15c and 4.30c; Apollo Steel Co., 2.30c, 3.10c and 4.30c; Newport Rolling Mill Co., 2.45c, 3.45c and 4.50c, freight allowed to Pennsylvania railroad lines; Trumbull Steel Co., 2.30c, 3.10c and 4.25c; Inland Steel Co., 2.40c, 3.25c and 4.40c; Alan Wood Iron & Steel Co., 2.40c for the blue annealed; Sharon Steel Hoop Co., 2.30c for the blue annealed and 3.15c for the black, base, Youngstown; Falcon Steel Co., 2.40c for blue annealed and 3.05c for black; Republic Iron & Steel Co., 3.30c for black and 4.30c for galvanized.

Pittsburgh, June 29.—Another good week is reported in the sheet industry. Specifications have been near capacity for the past two weeks. Makers are expanding their backlogs. Orders have come in for almost every grade, and from different lines of manufacture as well, as from jobbers who buy at the low market. The price situation is tending toward improvement. The low figures on black sheets are disappearing and 3.10c to 3.15c are more frequent. The recent 2.90c price on black sheets was on a tonnage of special grade stock carrying $28 per ton and extras. Large producers claim they would rather have business in that grade at that base price than common black sheets at 3.15c base. One large maker here reports specifications and orders averaging 3000 tons daily.

Cleveland, June 29.—Distinct betterment is noted in the local sheet market. Although many large buyers are not contracting for third quarter needs, due to mid-year inventories, inquiries and orders are better. One mill closed on over 1000 tons of two grades last week. Mills are finding it easier to get 3.15c Pittsburgh on black sheets, although quotations down to 3.00c have not disappeared. Most local sellers believe the 3.15c level will apply on the bulk of third quarter contracting. Blue annealed sheets are steadying, with less 2.30c and more 2.40c Pittsburgh being quoted. On galvanized 4.20c has not disappeared but 4.30c is becoming the minimum. Autobody sheets are the only grade not showing increased activity or strengthening, orders being small and at the regular 4.20c price.

Buffalo, June 29.—Large sheet tonnages have been booked in the past ten days. Prices have rallied somewhat from low points which carried black as low as 3.00c, Pittbsurgh, and galvanized to 4.20c. Large consumpackers' canmakers, so far this has had no noticeable influence on output. Specifications for general line cans are heavy. Various makers are taking increased allotments for fruit cans and this may make up any lack in vegetable can tonnage. Last week a western canmaker added a large tonnage to its already large order for California fruit pack. One consumer, the only one to hold up June and July specifications, now has come through with specifications for three months but has been promised only one-third of the tonnage in August. Mills here are scheduled ahead through August and a large number of West Virginia tin mills are operating full and are scheduled ahead for four weeks. The price continues unchanged at $5.50.

Tin Plate

Demand Well Sustained—Pittsburgh Mills Scheduled Through August

TIN PLATE PRICES, PAGE 24

Pittsburgh, June 29.—While continued cool weather will affect the tonnage of tin plate consumed by

Pipe

Mills Operating at Practical Capacity—Large Gas Line Placed

STEADY flow of orders, although small, are maintaining pipe mill operations at 90 to 95 per cent, or practical capacity. A Texas gas line is reported awarded the leading maker with 48,500 tons involved. French pipe deliveries to the Great Lakes this season are expected to total 15,000 tons. Cast pipe is more active with municipal buying the feature.

PIPE PRICES, PAGE 24 AND 68

Pittsburgh, June 29.—Due to excessive demand for large sizes of pipe, particularly in oil country goods, and to sustained demand for buttweld pipe from standard full weight merchant jobbers, pipe mills are running at practical capacity. Here and there a furnace is down for repairs but generally producers are on a 100 per cent basis. An exact average would be between 90 and 95 per cent. Deliveries are deferred on some of the more popular sizes in oil country goods but on a great many sizes delivery can be made the same day the order is received or the day following. Occasionally a line pipe order is received for five or ten carloads at a time and from time to time casing orders involve 300 or 500 tons, but some action of the contemplated gas and oil lines continues to be deferred. A valley mill recently was awarded a gas line for Texas involving about 18,000 tons.

Boston, June 29.—Small sizes of cast iron pipe continue in active demand. Sales of larger pipe have slowed up and some price concessions for 24-inch and above are being made.

New York, June 29.—Opening of bids on 2775 tons of cast pipe, fittings and manhole frames and covers, by the local department of purchases, features the cast iron pipe market. Little else is noted in municipal demand, now the slackest this year. Private inquiry is fairly well maintained and with most pipe makers booked up to September, the market, especially on the smaller sizes, continues firm.

Chicago, June 29.—Bookings of cast iron pipe continue to approximate shipments, considering all sizes, but in maintaining this position sales in southern territory have had to bear the brunt of the load. In northern territory more accent is placed at this time upon shipments than incoming business. Including some of the Detroit tonnage placed last year it is expected that 15,000 tons of French pipe will be brought by water to Great Lakes destinations this season. Cast pipe, 6 to 24 inches, is unchanged at $48.20 to $49.20, Chicago.

Birmingham, Ala., June 28.—New lettings have not been as frequent nor tonnages as heavy as a short time ago in the cast iron pressure pipe market. Quotations remain firm, and shipments equal production.

Dallas, Tex., June 28.—Lone Star Gas Co. has awarded construction contracts on an 18-inch gas line in the Texas panhandle to Oklahoma Contracting Co., Tulsa, Okla. The pipe contract has been let to National Tube Co. and couplings to the Dayton Pipe Coupling Co. Line will require approximately 48,500 tons of pipe.

CONTRACTS PLACED

600 tons, 12-inch, New London, Conn., to R. D. Wood & Co.

550 tons, 6 and 8-inch class B and C pipe for Ashworth street project, Seattle, Wash. B. Nicoll & Co. took 250 tons balance to unnamed interest.

300 tons, 12 and 16-inch, Braintree, Mass., to Donaldson Iron Co.

273 tons, 6 and 10-inch B, University avenue extension, San Diego, Calif., to B. Nicoll & Co.

250 tons, 6 to 18-inch class B pipe, Tacoma,

Wash., to B. Nicoll & Co.
250 tons, Wellesley, Mass., to Warren Foundry & Machine Co.
200 tons, Winchendon, Mass., to Warren Foundry & Machine Co.
130 tons, 4 to 18-inch class B pipe for Alhambra, Calif., to B. Nicoll & Co.
103 tons, 12-inch class B pipe, South Pasadena, Calif.; to National Cast Iron Pipe Co.

CONTRACTS PENDING

5000 tons, pipe line, Amarillo, Texas; bids received.
2775 tons, department of water supply, gas and electricity, New York, bidders as follows: United States Cast Iron Pipe & Foundry Co. on 2240 tons of 6, 8 and 12-inch pipe $51.95 a ton and $130 a ton on 295 tons of fittings; R. D. Ward & Co., at $52.40 on the pipe and $126 a ton on the fittings; Donaldson Iron Works, $52.80 on the pipe and $129 a ton on the fittings; Talladega Foundry & Machine Co., Talladega, Ala., $115 on the fittings, and Warren Foundry & Machine Co., $126 a ton on the fittings.
1135 tons, 30-inch and 418 tons 20-inch class C pipe for Milwaukee; United States Cast Iron Pipe & Foundry Co. only bidder at $46.90 per ton.
412 tons, 4 to 10-inch class B pipe, Los Angeles, Spec. 740; B. Nicoll & Co. low bidders.
293 tons, 12-inch class B and C pipe, Los Angeles, Spec. 795-C; Grinnell Co. low bidder.
109 tons, 6 and 8-inch class B pipe for Rio Viata, Calif.; bids July 1.

Cold Finished Steel

Increased Buying Being Done By Automotive and Other Users

Pittsburgh, June 29.—Additional buying of cold finished steel bars has been done by automotive industries and other representative lines. Orders for June show an increase over May in the same period of 15 to 20 per cent. One or two prominent finishers expect the total for the month will be at least 25 per cent greater than for May. While some are operating on 85 per cent schedules, others achieve only 75 per cent. The price is firm at 2.50c.

Iron Ore

Market Quiet—Shipments Nearly 4,000,000 Tons Behind 1925

Cleveland, June 29.—Activity in the Lake Superior iron ore market is restricted to small miscellaneous lots for filling in purposes. An inquiry for 100,000 tons for a merchant furnace still is pending. Shipments from the Lake Superior district in June are estimated at 8,450,000 tons, compared with 6,112,981 tons in May. The total to July 1 is approximately 14,572,645 tons, which is 3,820,540 tons behind the movement in 1925 to July 1.

More Pig Iron Imports

Philadelphia, June 29.—The following imports of iron and steel were received at this port during the week ended June 26: 3170 tons, pig iron, England; 1750 tons, pig iron, Germany; 41 tons, pig iron, Sweden; 370 tons, structural steel, Belgium; 132 tons, cast iron pipe, France; 27 tons.

Bars

Bookings Continue Large and Prices Hold Well—Mills Sell Through Third Quarter

BUYING of soft steel bars continues heavy, Chicago mills probably establishing a new first half record. On 6000 tons of bars the Pennsylvania railroad was quoted 2.00c Pittsburgh generally. Some mills are limiting sales for third quarter. Low-priced tonnages are being canceled at the end of June, which is increasing specification.

BAR PRICES, PAGE 24

Chicago, June 29.—The buying movement in soft steel bars in undergoing a natural deceleration. However, a substantial proportion of third quarter requirements has been placed and June sales have been sufficient to make the month 50 per cent better than May. In respect to sales, shipments and specifications the first half year is shaping in better than the first half of 1925; in fact, shipments of bars have probably set a new first half record. From the volume of buying the outlook is that the midsummer lull will not be pronounced. Implement manufacturers will soon be past their inventory period and will be taking in material for their fall programs. For the season, automotive and accessory demand for bars is high. New business in bars has been considerably ahead of shipments the past month due to the third quarter buying movement. Makers say concessions under 2.10c, Chicago, on new business, are infrequent but it will be well into the new quarter before all of the tonnage taken prior to the advance is worked off.

One rail steel maker continues to operate double turn. Demand for rail steel building bars is outstanding. Most business in rail steel is booked at 2.00c, though road work is shading this level. Bar iron is unchanged at 2.00c, with business sufficient for intermittent single turn operations. The Riverdale mill is expected to be operating again shortly.

Boston, June 29.—Bar sales in the past week were ahead of the month's average. The price holds at 2.00c, Pittsburgh but is slightly less firm. Mills previously withholding September quotations are now selling for that delivery.

Philadelphia, June 29.—Steel bar specifications have shown great vitality but the new price of 2.00c is being tested infrequently as the trade generally was covered at 1.90c, Pittsburgh. Occasional small sales are being made as high as 2.10c, Pittsburgh. Iron bars are selling at 1.90c, with an occasional concession to 1.85c, though this is exceptional.

Pittsburgh, June 29.—Third quarter contracting in merchant steel bars continues apace, or as much of that period as makers are willing to take. Some of the arrangements completed are for the requirements of customers for one or two months, so that when the time for fourth quarter contracting arrives, bar makers generally will have clean slates. Second quarter tonnages largely have been specified against, particularly those of structural fabricating shops since these were notified that specifications must be in by June 30 or all low priced business would be cancelled. The 2.00c price generally is quoted and on small quantities 2.10c is asked.

Philadelphia, June 29.—On 6000 tons of steel bars for the Pennsylvania railroad for third quarter, Bethlehem Steel Co., Crucible Steel Co., Eastern Steel Co., Donner Steel Co., Jones & Laughlin Steel Corp., Carnegie Steel Co. and Republic Iron & Steel Co. bid 2.00c base mill, while Illinois Steel Co. and Inland Steel Co. bid 2.10c base mill.

Buffalo, June 29.—The 2.365c price on bars seems well established here now except possibly on the largest transactions.

Cleveland, June 29.—With the coming of the third quarter the price of 1.90c on steel bars quoted by some makers for specification by July 1 has disappeared and the market now appears to be firmer on a basis of 2.00c Pittsburgh or 2.19c Cleveland. Additional sales for third quarter specification on this basis were made this week. Specifications against expiring second quarter contracts at 1.90c have been active. Incoming tonnage in July with all sellers is well ahead of May. Automobile builders report the best June production in history. Some of them have released important tonnages which were under suspension and have been placing additional orders for new production schedules from July 1. A large buyer has closed on about 10,000 tons for its third quarter requirements, the same as specified out in the second quarter.

Hoops and Bands

Liberal Orders Being Received and Price Holds Steady

HOOP PRICES, PAGE 24

Pittsburgh, June 29.—Fairly liberal orders are being received for hoop and band sizes of hot rolled flats. These are coming from automotive lines and other consumers and all business is being done at 2.50c, about which there is no question. Operations of narrow mills average 75 to 80 per cent.

Structural Shapes

Volume of Awards Continues Good—Large Tonnages Are Scarce But Small Lots Are Numerous—Prices Are Steady

AWARDS of 3000 tons for subway work features the structural market this week. Large contracts are fewer although small lots continue active. Steel needs for the city hall annex at Philadelphia, on which 3500 tons was placed several weeks ago, have been increased to 4000 tons. Specifications against contracts have enabled mills in the Philadelphia district to accumulate four to six-week backlogs. A New York fabricator has estimated requirements for the present movement in railroad bridge building as the heaviest since 1907. Office buildings are taking near a record tonnage at Chicago.

Prices generally are firmer, with 2.00c Pittsburgh equivalents more common on third quarter business. Fabricated material competition is keen.

STRUCTURAL SHAPE PRICES, PAGE 24

New York, June 29.—Fabricators report a continued good volume of work, and for the most part, are fairly well booked ahead. Prices on fabricated material do not accurately reflect such a condition, as sharp competition in some quarters is still noted. Featuring the local market is award of 3000 tons of subway work. A good amount of bridgework is being figured. One large fabricator describes railroad demand for bridges during the past few months as the best since 1907. Few heavy orders have been involved in recent buying, but the volume is large. A range of 1.90c to 2.00c, Pittsburgh, is representative of the shape market on the general run of business.

Boston, June 29.—Large structural awards are scarce, but tonnage on small lots holds up. Prices for third quarter are firm at 2.00c, Pittsburgh. Some shading has been done on spot sales.

Philadelphia, June 29.—Heavy shape specifications against recent contracts have been keeping mills busy. It is necessary to specify four to six weeks ahead to get assurance of shipment. Prices on new business range from 1.90c to 2.10c, Pittsburgh. Recent Pennsylvania railroad lettings for bridges aggregated 2500 tons, going to McClintic-Marshall Co., American Bridge Co., Bethlehem Steel Co. and Mt. Vernon Bridge Co.

On 1000 tons of shapes for the Pennsylvania railroad for third quarter, Bethlehem Steel Co., Jones & Laughlin Steel Corp. and Carnegie Steel Co. bid 2.00c base, Eastern Steel Co., 1.95c and 2.00c base mill, Phoenix Steel Co. 2.15c, and Inland Steel Co. and Illinois Steel Co., 2.10c base mill.

Pittsburgh, June 29.—Deferred action is true of a great many of the big structural jobs in Pittsburgh and vicinity. Many small jobs are being figured each week and a fair number of these turn into orders. Fabricators are maintaining average operations of 75 to 85 per cent. While nominally the market price has been raised on plain material, to 2.00c minimum, some fabricators still are buying their shapes at 1.90c.

Cleveland, June 29.—Activity in the local market in 100-ton lots noted last week has quieted down. Local fabricators report no sales involving such tonnage this week, small carload lots constituting the activity. Plain material contracting for third quarter is better, but reflects the quietness of fabricators. Third quarter prices are 2.19c Cleveland or 2.00c Pittsburgh. Larger mills say no 1.90c tonnage unspecified on second quarter contracts will be carried forward.

Chicago, June 29.—Chicago building permits for the first half year will show a loss of 10 to 15 per cent from the first half of 1925, yet this condition could not be told by a glance at mill books on beams. Office building projects are taking practically a record breaking tonnage, with activity in apartment hotels second. Industrial construction is negligible. Competition for structural business continues sharper than in any other finished lines and recent bids of $72, delivered, for some downtown Chicago projects have failed to get business. The Midland club, Chicago, requiring 4200 tons, is expected to be placed this week. Beams are quoted at 2.10c, Chicago.

Awards Compared

	Tons
Awards this week	27,369
Awards last week	39,631
Awards two weeks ago	28,757
Awards this week in 1925	29,784
Average weekly awards, June	31,927
Average weekly awards, 1926	29,237
Total awards to date, 1925	869,022
Total awards to date, 1926	758,299

CONTRACTS PLACED

4000 tons, City hall annex, Philadelphia, to American Bridge Co., previously announced as 3500 tons.

3000 tons, Medical Arts building, Chicago, to McClintic-Marshall Co. D. H. Burnham & Co., 160 North LaSalle street, Chicago, architects.

3000 tons, subway section, Brooklyn, N. Y., to the American Bridge Co.

2500 tons, Fox theater, Market and Hayes street, San Francisco, to United States Steel Products Co.

1800 tons, two bridges for the Louisville & Nashville railroad, Louisville, Ky., to the American Bridge Co.

1800 tons, B. F. Keith theater, Boston, to New England Structural Co.

1230 tons, office building, 7, 9 and 11 East Forty-fourth street, New York, to Bethlehem Fabricators, Inc.

1000 tons, apartment, 111-114 Park avenue, New York, placed, the order reported going to Bethlehem Fabricators, Inc.

1000 tons, apartment at 1400 Lake Shore drive, Chicago, to Hansell-Elcock Co.

1000 tons, two items: Office at 160 East Fifty-sixth street, New York, to Lehigh Structural Steel Co.

Professional building, 2021 Bryant Concourse, New York, to Taylor-Fichter Steel Construction Co.

1000 tons, McKinley Technical high school, Washington, to Barber & Ross.

875 tons, general hospital, Iowa City, Iowa, to Rochester Bridge Co.

870 tons, church, school, rectory and convent for Lady of Pompei, LeRoy and Bleecker streets, New York, to the Hinkle Iron Works; M. W. Delgaudio, architect.

835 tons, apartment for Haskell Associates, Inc., Bronx parkway, Scarsdale, N. Y., to the Oltmar Iron Works.

700 tons, 7-story loft, New York, to the Hay Foundry & Iron Works, through Buckman & Kahn, general contractors.

600 tons, building for Citizens Gas Co., Indianapolis, to Insley Mfg. Co.

500 tons, miscellaneous work including Woods Run school, Pittsburgh; New Castle Methodist church, New Castle, Pa.; and building for the Meadville Dairy Co., Meadville, Pa., to the Guibert Steel Co.

500 tons, apartment, 312-16 West 106th street, New York, placed, the order reported going to the Bethlehem Fabricators, Inc.

450 tons, transmission towers for the Atlantic City Electric Co., Wilmington, Del., to the American Bridge Co.

450 tons, storehouse for R. H. Macy & Co., to be erected at Long Island City, N. Y., to the Belmont Iron Works.

450 tons, school No. 91, Brooklyn, to the Eastern Steel Co., this job was previously reported as being school No. 52, which continues pending.

400 tons, building, Pittsfield, Mass., to the American Bridge Co.

400 tons, transmission towers for the Scranton Electric Co., Scranton, Pa., to the American Bridge Co.

325 tons, bridge over Snake river, Oregon, to Virginia Bridge & Iron Co.

250 tons, repair shop for Michigan Limestone & Chemical Co., Chicago, to Illinois Steel Warehouse Co.

250 tons, warehouse for the Curtis Publishing Co., Philadelphia, to the American Bridge Co.

250 tons, high school, Clairton, Pa., understood to have been awarded J. E. Moss Iron Works, Wheeling, W. Va., through Carl Shimp, Martins Ferry, O., general contractor.

225 tons, motion picture theater, Corona, Long Island, to the National Bridge Co. through Perri Contracting Co., general contractors.

220 tons, Hamilton Mfg. Co., Two Rivers, Wis., to American Bridge Co.

200 tons, building for Fish Furniture Co., Chicago, to Wendnagel & Co.

200 tons, Baptist church, Louisville, Ky., to Snead Architectural Iron Works Co.

130 tons, gymnasium for state teachers' college, Greeley, Colo., to E. Burkhardt & Son Steel & Iron Works.

130 tons, John J. Nesbitt factory, Philadelphia, to Belmont Iron Works.

130 tons, Cooper river bridge, Camden, N. J.,

to American Bridge Co.

220 tons, club house at Golden Gate park, San Francisco, to Dyer Bros.

119 tons, highway bridges for Sioux county, Iowa, to Des Moines Steel Co. and Pittsburgh-Des Moines Steel Co.

110 tons, boiler room and bins for Colorado Portland Cement Co., Boettcher, Colo., to E. Burkhardt & Sons Steel & Iron Works.

100 tons, building for Aetna Paper Co., Franklin, O., to Dayton-Whirley Co.

100 tons, Scranton Dry Goods building, Scranton, Pa., to independent fabricator.

100 tons, McCrory's store, Greensburg, Pa., to the W. N. Kratzer Co.

Tonnage unstated, building for the Westinghouse Electric & Mfg. Co., Sharon, Pa., (welded steel) to the Morgan Engineering Co.

CONTRACTS PENDING

3800 tons, sheet piling, for municipal piers, Buffalo; general contract to Monarch Engineering Co.

2000 tons, crest gates, for the Susquehanna Power Co., Havre de Grace, Md., bids asked; this was previously noted as involving 1000 tons.

1500 tons, Pennsylvania railroad bridges; bids open July 15.

1500 tons, hotel, Allentown, Pa.; general contract to Roberts & Rollins.

1000 tons, 15-story Bing & Bing apartment, 433 East Fifty-seventh street, New York; bids asked.

1000 tons, athletic buildings, Brown university, Providence, R. I.; bids asked; previously reported as involving 600 tons.

900 tons, column cores, for building for Parker & Shaffer, Varick and King streets, New York; bids asked.

500 tons, hotel, Knoxville, Tenn.; bids asked.

375 tons, undergrade crossing under Southern Pacific tracks, South San Francisco; bids in.

305 tons, bridge on top of American Falls dam, American Falls, Idaho; bids in July 28.

300 tons, plant for Standard Sanitary Mfg. Co. at Richmond, Calif.; bids being received.

300 tons, building for the Sement Solvay Co., Buffalo; bids asked.

300 tons, miscellaneous bridge repairs, New York Central; bids asked.

255 tons, loft bldg., Market and McAllister streets, San Francisco; Dyer Bros., low bidders.

250 tons, the Vallejo apartments, San Francisco; bids being received.

250 tons, Warren bank, Warren, Pa.; bids closed June 28.

200 tons, estimated, high school at Woodlawn, Pa.; Carlisle & Sharrer preparing plans.

200 tons, buildings for the Westinghouse Air Brake Co., Wilmerding, Pa.; general contractor F. Hoffman Co., Wilkinsburg, Pa.

200 tons, three bridges for the Reading Co.; bids asked.

130 tons, plant addition, William Powell Co., Cincinnati; pending.

100 tons, building on Second avenue for Barbers' Supply house, Pittsburgh; bids being taken.

100 tons, additional top story from Grabowsky's Fur Store, Pittsburgh; bids being taken.

War Time Plant at Erie To Be Moved South

Dismantling and salvaging of the Wayne Steel Co.'s plant at Erie, Pa., was started this week by Arthur G. McKee & Co., Cleveland. A large part of the equipment of the Wayne Steel Co. never was operated. Financial difficulties caused the plant to be taken over by a receiver. The two 30-ton open-hearth furnaces and the special billetmaking machinery will be sold. The buildings, cranes, crane runways and miscellaneous equipment will be moved to Pulaski, Va., reassembled at the plant of the Pulaski Engineering Works, and used for light structural fabrication.

Concrete Bars

Inquiries Numerous and Awards Steady—Prices Unchanged—Roadwork Active

REINFORCING bar business continues at a steady pace, although awards this week are lighter than those last week. Inquiries are numerous, although mostly for small lots. Roadwork continues to take good tonnages, with 2500 tons still pending for Pennsylvania and West Virginia. Apartment house demand is more active at Chicago.

REINFORCING BAR PRICES, PAGE 24

Chicago, June 29.—Fair business has been done the past week by reinforcing bar warehouses, in a number of cases awards being made quietly. Pending business continues to expand and a good last half year is in prospect if a fair proportion of this work goes through. Apartment hotel projects continue to lead, with practically no industrial demand. Warehouses have contracted liberally for third quarter bar requirements. Billet bars are quoted at 2.50c to 2.60c, Chicago, with the possibilities that the recent advance in mill prices will be reflected shortly. Rail steel building bars range from 1.95c to 2.00c.

Boston, June 29.—Sales and awards of the past week have been light. Work being figured totals from 1000 to 1500 tons. Prices are fairly steady with some shading on round tonnages. The Boston warehouse price is 2.90c to 3.00c.

Buffalo, June 29.—New inquiry for reinforcing bars includes one lot of 700 tons, another of 500 and several of smaller proportions. Mill operation is high and small lots are being declined for mill shipment if wanted at once. Mill shipment bars are quoted at 2.265c, Buffalo, and small lots from warehouses are bringing 2.75c.

Pittsburgh, June 29.—Numerous small concrete jobs are up in the greater Pittsburgh district. Inquiries are numerous but the greater number do not materialize. About 2500 tons of bars is to be placed by various road contractors. Mill prices are unchanged at 2.00c to 2.10c on new billet bars.

Cleveland, June 29.—Buying of concrete bars in this district is confined to small lots, mostly for immediate fabrication. Specific projects taking upwards of 100 tons each are scarce. Prices locally are steady at 2.19c Cleveland or 2.00c Pittsburgh, no test being offered by present orders. Rail steel is quoted at 1.80c to 1.90c mill. Warehouse stocks of new steel bars are priced at 2.60c to 3.00c Cleveland.

Awards Compared

	Tons
Awards this week	3,447
Awards last week	10,836
Awards two weeks ago	2,756
Awards this week in 1925	6,595
Average weekly awards, June	6,373
Average weekly awards, 1926	5,852
Total awards to date, 1925	170,630
Total awards to date, 1926	149,739

CONTRACTS PLACED

800 tons, Russ Bldg., San Francisco, to unnamed San Francisco jobber.

640 tons, four schools taking 160 tons each, for board of education, Chicago, three to Joseph T. Ryerson & Son, Inc. and one to Kalman Steel Co.

550 tons, work for Federal Cement Co., Buffalo, to unstated Buffalo fabricator.

350 tons, building for Appleton Electric Co., Chicago, to Calumet Steel Co.; Walter W. Ahlschlager, 65 East Huron street, Chicago, architect.

300 tons, University of Pennsylvania gymnasium and stadium, Philadelphia, to American Steel Engineering Co.

250 tons, Baltimore & Ohio railroad warehouse, Philadelphia, to Milton Mfg. Co., announced last week as independent fabricator, through Penn Steel Service Co.

200 tons, highway bridges, Tennessee, to Concrete Engineering Co.

200 tons, Wieboldt hall, University of Chicago, to Joseph T. Ryerson & Son, Inc.

167 tons, bridges at Ambler and Cynwid, Pa., instead of 160 tons reported last week, to Davis Bros.

100 tons, Reading railroad bridge, Hummelstown, Pa., to Concrete Steel Co.

100 tons, McWhite building, Chicago, to Concrete Engineering Co.

100 tons, Chicago & Western Indiana railroad subways, Chicago, to Concrete Engineering Co.

100 tons, addition to Lewis Mfg. Co. plant, Norwood, Mass., to Edward A. Tucker Co.

CONTRACTS PENDING

9500 tons, bridge, Lake Port Chartrain, New Orleans; bids in July 8.

8000 tons, Pennsylvania railroad track elevation, Philadelphia; general contract awarded Sinclair & Gregg.

2500 tons, highway jobs in Pennsylvania and West Virginia; bids being filed.

1200 tons, reservoir, water department, Providence, R. I.; bids close June 30.

1200 tons, Hotel Touraine, Lake Shore drive and Schiller street, Chicago. Hooper & Janusch, 879 North State street, Chicago, architects.

1000 tons, foundation and piers, Mid-Hudson bridge, Poughkeepsie, N. Y.; bids being taken. Blakeslee-Rollins Co., Boston, general contractors.

700 tons, tie bars and reinforcing, for municipal piers, Buffalo; Monarch Engineering Co., contractors.

700 tons, building for *Toledo Blade*, Toledo, O.; general contract to H. J. Spieker.

600 tons, apartment at Dearborn and Goethe street, Chicago; B-W Construction Co., 720 Cass street, Chicago, general contractor.

500 tons, Texas street sewer, Buffalo; contract to Pittsburgh Foundation Co.

450 tons, Kozelka warehouse, Chicago; general contract to Turner Construction Co., 6 North Michigan avenue, Chicago.

300 to 400 tons, Dellwood apartment, Toledo, O.; pending.

300 tons, Conde Nast building, Stamford, Conn.; G. J. Pardy Construction Co., Bridgeport, Conn., awarded general contract.

250 tons, sorority buildings for Northwestern university, Evanston, Ill.; pending.

190 tons, Garfield Park hospital, Chicago; plans by Schmidt, Garden & Martin, 104 South Michigan avenue, Chicago.

150 tons, administration and laboratory buildings for the aviation field, Dayton, O.; bids being taken.

150 tons, Home Savings Bank, Albany, N. Y.; John Dwyer, Albany, awarded general contract.

150 tons, grandstand, Brookline, Mass.; bids being taken.

142 tons, Durgin garage, Brookline, Mass.; bids being taken.

125 tons, Duquesne-McKeesport, Pa., bridge substructure; bids being taken.

125 tons, Mt. Logan school building, Chillicothe, O.; bids in.

100 tons, state capitol office building No. 2, Charleston, W. Va.; bids being taken.

100 tons, auditorium hotel, Cleveland; pending.

100 tons, Goodyear Tire & Rubber Co. plant at Boston; bids being taken.

100 tons, high school, Ontario, N. Y.; Rankin Construction Co. general contractor.

Tonnage unstated, three reinforced concrete automatic electric locomotive coaling stations at High Springs, Fla., for Atlantic Coast Line railway; Roberts & Schaeger Co. awarded general contract.

Tonnage unstated, five-track reinforced concrete coaling plant at Coaler, Watseka, Ill., for Chicago & Eastern Illinois railway; Roberts & Schaeger Co. awarded general contract.

Tonnage unstated, 17-story apartment building at 70 East Cedar street, Chicago. McNally, Quinn & Co., 10 South LaSalle street, Chicago, architects.

Tonnage unstated, apartment building at Cornelia and Stratford streets, Chicago; Hooper & Janusch, 879 North State street, Chicago, architects.

Tonnage unstated, 14-story hotel at 163 East Walton place, Chicago; Rissman & Hirschfeld, 64 West Randolph street, Chicago, architects.

Tonnage unstated, 8-story hotel building at Kenmore and Lawrence avenue, Chicago; Huszagh & Hill, 6 North Michigan avenue, Chicago, architects.

Tonnage unstated, 15-story apartment hotel at 1214 North State street, Chicago; Oldefest & Williams, 605 North Michigan avenue, Chicago, architects.

Tonnage unstated, stands at White Sox baseball park, Chicago; Osborne Engineering Co., Cleveland, engineer. Plans ready for bids in July.

Tonnage unstated, 6-story building for Clapp, Riley & Hall Equipment Co., 14 South Canal street, Chicago; pending.

Tonnage unstated, Benedictine Sisters' hospital, St. Cloud, Minn.; plans by Schmidt, Garden & Martin, 104 South Michigan avenue, Chicago.

Barge Line To Resume

St. Louis, June 28.—Federal Judge Faris has ordered Edward L. Goltra, president of the Mississippi Valley Iron Co., to return to the Inland Waterways Corp. his $4,000,000 fleet of 19 barges and four towboats, leased to him in the closing days of the Wilson administration, which has been the center of legal battles in the Federal courts since its seizure in 1923 by Brig. Gen. T. Q. Ashburn.

General Ashburn, chairman of the board and executive of the Inland Waterways Corp. is in St. Louis to take charge of the transfer. The United States Supreme Court in a recent decision returned the boats to the government. General Ashburn predicted that they would be operated within a few days as part of the Mississippi-Warrior service between St. Louis and New Orleans.

Rails, Cars

Rails Still Active But Equipment Is Slow—Locomotive Buying Scattered

TRACK materials continue active, with rail buying featured this week by the Great Northern closing 20,000 tons. Car buying in June exceeded May but remains light. Contemplated programs are heavy although inquiries are few. Locomotive orders are more numerous but are small. Santa Fe is seeking 40 tenders. Western rail mills are operating at capacity.

RAILROAD TRACK MATERIAL PRICES, PAGE 24

Chicago, June 29.—Rarely have western mills been so pressed by the railroads to make deliveries against rail and track fastening contracts. In practically every case railroads are taking out their entire obligations. Inquiry for fastenings has enlarged greatly the past week. Rolled steel wheel as well as rail capacity is fully engaged.

Great Northern railroad has placed 10,000 tons of rails with the Illinois Steel Co., 7000 tons with Bethlehem Steel Co. and 3000 tons with Inland Steel Co. The angle bars, spikes and bolts, totaling about 3000 tons, will be provided in proportion.

Rumors of prospective car buying are plentiful but no definite programs have developed. Recent awards of underframes, dining cars and stock car bodies to western shops have brought 4500 tons of steel to the leading interest. Repairs to cars in carriers' own shops call for 15,000 tons of finished steel, an unusually large amount for this purpose.

Boston, June 29.—Railroad buying has subsided. Bridge work and yard extensions are in prospect and repair shops in the district are active.

New York, June 29.—Car buying again is exceedingly slack; in fact, the past two weeks have been almost as dull as any time this year. Owing to some fairly substantial orders early in the month, June will show a considerable gain over May, when approximately 450 cars were placed. It is estimated that awards for June will run a little over 4000 cars. Locomotive buying also continues dull, with orders small and scattered and little outstanding in the way of new inquiry.

Philadelphia, June 29.—On a lot of 3600 axles for the Pennsylvania railroad bid Monday the following prices were quoted, base mill for car and fender truck axles, Carnegie Steel Co. 2.50c, Illinois Steel Co., 2.65c, Pittsburgh Forge & Iron Co., 2.90c, Bethlehem Steel Co., 3.00c, Johnstown, Pa., American Locomotive Co., 4.30c, and Morgan Engineering Co., 4.77c.

Lorain Steel Co. is low bidder on a large tonnage for special track work at the Olney avenue yards, Broad street subway, Philadelphia.

Pittsburgh, June 20.—Orders in June for light rails are twice as numerous and twice as heavy as in May. The price now is generally held at $34, with a decided trend upward. Orders still call for small lots. Moderate buying only is being done in track accessories, various makers reporting exceedingly small lots. Quoted prices are unchanged.

Cleveland, June 29.—An inquiry for 1000 tons of rails has been issued by the Wheeling & Lake Erie railroad.

ORDERS PLACED

Calumet & Hecla Consolidated Copper Co., five ore cars, to Pressed Steel Car Co.

Chicago & North Western, 25 caboose underframes, to the Bettendorf Co.

Louisville & Nashville, two baggage cars, to Pressed Steel Car Co.

National Tube Co., 25 gondola bodies, to Pressed Steel Car Co.

Pennsylvania Coal Co., 150 mine cars, to American Car & Foundry Co.

Seaboard Air Line, 32 express cars to Pullman Car & Mfg. Co., and 15 to American Car & Foundry Co., these are in addition to 27 placed last week.

LOCOMOTIVE ORDERS PLACED

Chicago, St. Paul, Minneapolis & Omaha, eight locomotives, to the American Locomotive Co.

City of St. Louis, switch engine, to the Baldwin Locomotive Works.

Los Angeles Junction, switch engine, to American Locomotive Co.

Pennsylvania, seven electric locomotives, to its Altoona, Pa., shops. American Brown Boveri Electric Co. to supply equipment.

Toledo, Angola & Western, switch engine, to the American Locomotive Co.

Union Terminal, switch engine, to the Baldwin Locomotive Works.

Waukegan Generating Co., switch engine, to the Baldwin Locomotive Works.

ORDERS PENDING

American Refrigerator Transit Co., 200 refrigerator cars; contemplated.

Chesapeake & Ohio, 500 gondola bodies; bids asked.

Chicago, Burlington & Quincy, 350 center constructions; pending.

Darling & Co., Chicago, eight to 10 box cars; bids asked.

Fruit Growers Express, 400 underframes; bids asked.

Georgia & Florida, 450 box cars, award expected June 29.

Gulf Refining Co., 30 gondola cars; bids asked.

Wabash, 40 cabooses; pending.

LOCOMOTIVE ORDERS PENDING

Atchison, Topeka & Santa Fe, 40 locomotive tenders; bids asked.

Complete automatic arc welding machinery for the welding of dredge pipe recently was purchased by the American Rolling Mill Co., Middletown, O., from the General Electric Co., Schenectady, N. Y. It is said to be the first application of automatic arc welding for this class of service.

Wire

Buying Steady and Prices Firm —Lack of Stocks Gives Market Strength

CONSUMERS and jobbers alike are avoiding accumulation of stocks of wire, nails and wire products. As a result demand is reflected immediately to mills and a steady flow of business results. Operations and prices are steady. Third quarter bookings indicate continuance of present production. June shipments are expected to exceed May.

WIRE PRICES, PAGE 24

Chicago, June 29.—Specifications for manufacturing and jobbing lines, of wire and wire products, while not engaging more than 55 to 60 per cent of mill capacity, show practically no variation and are at a higher rate than in May or last June. Improvement from the automotive industry is expected next month, as new models appear. Buying of wire nails by country jobbers reflects the dearth of new construction in rural regions. Barbed wire is in relatively lighter demand than plain fencing. Neither producers nor jobbers have stocks. Business into the third quarter is being taken at 2.55c, Chicago or western mill, for plain wire and 2.70c to jobbers for nails. Mills claim firmness for these levels, especially in immediate Chicago territory.

Boston, June 29.—Wire demand has lessened slightly. Screw manufacturers are less active. This loss in tonnage is nearly made up by increased demand from wire specialty manufacturers. The price is unchanged at 2.50c, Pittsburgh. Nails are quiet at 2.65c Pittsburgh.

Buffalo, June 29.—Wire mills have had a good run of business from manufacturing consumers. Jobber purchases have been reduced by cold weather. Third quarter bookings justify continuation of operations on the present scale of 75 to 80 per cent of mill capacity. Prices show somewhat more firmness.

Pittsburgh, June 29.—Further orders from jobbers for wire and wire nails and from users of manufacturers' wire for various purposes have come to makers here. One reports orders averaging 200 or 300 tons daily. Stocks are not large, the general policy being to look to mills to make prompt deliveries. Base prices are unchanged at 2.50c on plain wire and 2.65c on wire nails. Operations average 50 to 60 per cent.

Philadelphia, June 29—Wire demand is better. On 100 tons of wire for the Pennsylvania railroad, the lowest price quoted was 2.50c base mill.

Bolts, Nuts, Rivets

Third Quarter Buying Exceeds That of Last Year—Prices Firm

NUT AND BOLT PRICES, PAGE 24

Chicago, June 29.—Makers of bolts and nuts find contracting for third quarter slightly ahead of last year. Specifications for June have been slightly in excess of May and of last June. Implement manufacturers are concluding inventories and in two or three weeks will be out with fair to good specifications. The spotty corn crop is the chief blot on the farm situation. Bolt and nut prices are based upon 50, 10 and 10 off for large machine bolts. Structural rivets are unchanged at 2.75c, Chicago, and small rivets at 70, 10 and 5 to 70 off. Wrought washers range from $6.40 to $6.50 off list, carloads, Chicago district, and lock washers at 85 to 90 off, f.o.b. factory.

Pittsburgh, June 29.—Further progress is reported among makers of nuts, bolts and rivets in closing third quarter contracts. Nobody is maintaining large stocks and specifications are coming in more frequently for small amounts. Operations are around 70 per cent for nuts and bolts although rivet makers are not so well off. Some structural shops have lately been specifying rivets a trifle more liberally. The price held by large producers is 2.60c, although some 2.50c prices are out and one maker in the valley has been quoting still lower figures.

Cleveland, June 30.—Specifications for bolts and nuts have shown further improvement during the past week. Third quarter contracts are being signed freely. Rivet specifications, although a little slow, have picked up a little and plant operations are being maintained at a steady rate. Quotations are firm.

Refractories

Better Demand for Prompt Shipment Increases Brick Production

Pittsburgh, June 29.—Numerous rush orders for brick in all grades, fire clay, chrome and silica, are the feature of the market. Users continue to buy as needed but there is more construction and more general repair work. Orders have increased in number and size. Total business for June is expected to exceed May by 15 to 20 per cent. Quoted levels are fairly firm although as always some price cutting is being done usually by smaller makers. Kiln operations continue around 60 or 65 per cent, some maintaining a 70 per cent average. Little contract inquiry is out for next quarter or last half, the leading maker reporting but one such and this buyer may do as others are doing, purchase its requirements on a month-to-month basis.

Strip Steel

Demand Heavier and Price Holding Well—June Total High

STRIP PRICES, PAGE 24

Pittsburgh, June 29.—Business continues to expand in both hot and cold rolled strip. One important maker reports that cold strip orders for June are 18 per cent in excess of May's and hot a little over 17 per cent. One or two other strip makers here report still greater increases but some of these have been aggressive lately in going out after business, particularly in cold strips, taking some tonnage under 3.75c. The minimum price now is 3.65c but some important makers so far have not shaded 3.75c. The hot price, 2.30c, is firmly entrenched and fairly large orders are being taken.

Philadelphia, June 29.—Hot strip is firm at 2.30c to 2.50c, depending on width. A number of contracts have been made for third quarter. Cold-strip is easy at 3.60c to 3.75c with even lower on some large tonnages. Buying of cold strip is limited to current requirements.

Cleveland, June 29.—Hot rolled strip demand is showing improvement. Inquiries for third quarter requirements are better in number although contracts are not large. Prices are firm at 2.30c on wide and 2.50c on narrow sizes. Although larger makers of cold-finished strip selling in this district are holding to 3.75c Pittsburgh, more talk of shaded prices is noted.

Merged Nut, Bolt Makers Elect New Officers

Officers of the Lamson & Sessions Co., which recently acquired the Kirk-Latty Mfg. Co., Cleveland, were elected June 25 at the board meeting of the combined companies. Frank C. Case, chairman of the Lamson & Sessions Co., was returned to that office. John G. Jennings, former president of the Lamson & Sessions Co., is head of the combined companies. George S. Case, formerly treasurer and general manager, is first vice president and chairman of the executive committee. Roy H. Smith, vice president, was made vice president and director of operations, and T. Lamson Jennings, secretary and sales manager, was made vice president and director of sales. Fred H. McIsaac, formerly president of Kiryk-Latty Mfg. Co., is now secretary and treasurer of the combined companies.

Swedish Iron & Steel Corp., New York, has decreased capital from $750,000 to $250,000.

Nonferrous Metals

Tin, Zinc and Lead Remain Fairly Firm But Copper Has Lost Much of Its Recent Strength—Buying Is Light

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
June 23	13.95	14.10	13.45	62.25	8.25	8.10	7.17½	27.00	13.12½	35.00
June 24	13.92½	14.10	13.45	61.62½	8.25	8.10	7.20	27.00	14.00	35.00
June 25	13.90	14.05	13.37½	61.87½	8.25	8.10	7.20	27.00	13.87½	35.00
June 28	13.87½	14.00	13.37½	61.62½	8.25	8.07½	7.15	27.00	13.50	35.00
June 29	13.87½	14.00	13.40	61.75	8.27½	8.10	7.20	27.00	13.75	35.00

NEW YORK, June 29.—The month is closing with copper having lost much of the recovery it made in the early part of the period, but with zinc, tin, lead and antimony retaining most of their recoveries. Buying has been light the past week, as generally the case at this season, and the trade expects the market to remain quiet until after July 4.

Consumption in all lines holds up well for summer and it was realization of this fact, rather than any increase in consumption, that caused recent price increases. Buying was active for a time, but with June and July needs well covered it was natural that activity subsided again, as buyers do not see the necessity at present to venture far into the future. Output of all metals remains large, perhaps having been cut less than consumption, and yet the two are well balanced, whereas a year ago consumption was the larger and stocks were being cut. Prices compare well with those of a year ago.

Copper—Refineries are pushed to keep up with specifications, yet some interests have a little metal they would like to turn over before the end of the month and others would like to have a little better backlog a few weeks ahead, and so it has been possible to buy down to 13.87½c delivered, in the East, and 14.00c to 14.12½c in the Middle West, though large quantities generally have been held for fairly firm prices and producers have not been pressing the market. The price still is within the narrow range that has prevailed since early in the spring, so that copper is one of the most stable commodities. Prices of rolled products and wire are unchanged, and while mills have cut their operations, they still are fairly busy.

Zinc—Buying of prime western has been light the past week and though it does not take much effort to swing the price first one way and then the other, the price remains higher than it was through much of the spring. The ore market is a factor for strength. Second-hands took some profit recently on concessions and left the market for at least a time to the smelters. It is thought that recent buying of zinc was nearly all for shipment within a few weeks.

Tin—Consumers bought moderately the past week and are thought now to be well covered for July but probably not well covered for August. Sales in the market here for the latter month and later have been mostly to dealers. Although the statistics in a few days probably will show a tight situation for the end of June, the market does not actually feel so much pinch as through the spring, and so spot now commands a premium of only one cent or not much more, and July only about ½-cent over later months.

Lead—Premium prices have disappeared from the market but the major rise is holding well, as smelters are well booked for July. Buying has become quiet as users are over their recent fear of a shortage or extremely high prices and are well covered for several weeks ahead.

Aluminum—Buying continues light but users are said to be taking shipments well and prices are unchanged. Now and then a little resale metal goes under the market. There was talk of the market being cut but it is asserted definitely that the market is steady to firm.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	18.87½
Copper, hot rolled	22.50
Zinc, (100-pound base)	11.25
Lead full sheets (cut ¼c more)	12.00 to 12.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.50
Copper	24.25
RODS	
High brass (round ⅝ to 2½-inch)	16.62½
Naval brass	19.37½
WIRE	
Copper, small lots	16.00
High brass	19.37½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	8.75 to 9.00
Chicago	9.00
Cleveland	8.75 to 9.00
HEAVY YELLOW BRASS	
Chicago	7.50 to 7.75
Cleveland	7.00 to 7.25
ZINC	
New York	4.25
Cleveland	4.75 to 5.00
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Chicago	10.50 to 11.00
Cleveland	10.75 to 11.00
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.00 to 7.25
LIGHT COPPER	
New York	9.50 to 9.75
Chicago	9.25 to 9.50
Cleveland	9.25 to 9.50
LIGHT BRASS	
Chicago	7.00 to 7.25
Cleveland	6.00 to 6.25
ALUMINUM	
Clippings	21.00 to 22.00
Borings, Cleveland	13.00 to 13.50
Cast	17.00 to 18.00

Secondary Metals

Remelt aluminum No. 12	23.00 to 24.00
Brass ingot, 85-5-5-5	11.50 to 11.75

Coke By-Products

Sulphate Prices Easier—Distillate Demand Holds Up

New York, June 29.—Nominally easier prices on sulphate of ammonia feature coal tar by-products market. Sulphate is now holding at $2.45 to $2.50, delivered, for domestic account and $2.45 to $2.50, port, on material in double bags for export. Pending seasonal buying by the fertilizer industry trading is slack, with little activity expected for at least two weeks. Foreign inquiry is at a standstill.

Trading in light oil distillates is well maintained, with particular activity in such lines as going to lacquer manufacture. Prices are unchanged with pure and 90 per cent benzols holding at 25 cents works, in tanks and 30 cents, in drums; solvent naphtha and toluol, 35 cents in tanks and 40 cents, in drums; commercial xylol, 36 cents in tanks and 41 cents, in drums.

Although listless, the market on naphthalene continues unchanged at 6½ to 7 cents, works, in flasks and 7½ to 8 cents, in balls. Phenol is listless, with the market unchanged around 22 cents.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.25	
90 per cent benzol	0.25	
Toluol	0.35	
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22

Per Pound at Producers' Plants

Naphthalene flakes	0.06½ to 0.07
Naphthalene balls	0.07½ to 0.08

Per 100 Pounds Delivered

Sulphate of ammonia	2.47½	

Warehouse

Demand Seasonably Above Normal But Slump Is Expected in July—Prices Continue to Show Firmness

BUYING from iron and steel warehouses continues above the seasonal normal, being ahead of May and better than June 1925 in many places. A slump during July is expected. Prices show more firmness, with cutting confined to a few centers.

Jobbing demand in the New York metropolitan district continues unusually good. Particularly active is demand for structural steel. Indications point to this month being the best so far this year for some jobbers.

Buffalo warehouses report sales during the first half of 1926 showed a substantial gain over the same period of 1925. The general run of business held steady throughout June and maintained the record of the year of each month having surpassed the corresponding one of 1925.

The principal change in the situation at St. Louis during the past ten days has been a slightly better demand for sheets. Belated specifications are arriving. The month has been satisfactory, and total volume of sales will run well over May.

June sales at Cleveland were about equal to those of May. One of the leading jobbers reported a drop but others showed a gain. Although one warehouse is doing 4.75c on galvanized sheets, 5.00c continues on the bulk of business. Other sheet prices are steady. Some 2.75c plate, shape and bar business has been done in surrounding territory, base Cleveland, but local levels are steady at 3.00c.

Demand which a week ago was reported smaller at Philadelphia again has improved. Some shading of prices is noted on out of town sales of bars, with a few sales under 2.80c. Local prices continue firm.

A steady volume of business is coming in to jobbers in the Chicago territory. No summer slump has materialized but one or two expect some tapering off before July is ended. The first six months, according to one Chicago warehouse will exceed last year by about 15 per cent.

Demand at Detroit continues well sustained for this time of year. in spite of some decreases due to the letup in the automotive industry. The closing of a number of plants for inventory and in preparation of new models for the coming season has lessened the demand materially.

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.15c
Ft. Worth	3.90c
Los Angeles	3.20c
New York	3.24c
Philadelphia	3.00c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	4.06c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
Ft. Worth	3.90c
New York	3.24c
Philadelphia	3.00c to 3.20c
St. Louis	3.15c
Tulsa	4.06c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.50c to 2.60c
Chicago, rail steel	1.95c to 2.00c
Cincinnati	3.30c
Cleveland	2.60c to 3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles, C.L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.15c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.25c
St. Louis	3.15c
Tulsa	4.06c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.25c
Ft. Worth	4.50c
Los Angeles	3.20c
New York	3.34c
Philadelphia	2.70c to 3.00c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	4.16c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.00c
Cleveland, 3/16-inch	3.225c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Ft. Worth	4.50c
Los Angeles	3.20c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.75c to 3.00c
Philadelphia, 3/16-inch	2.85c to 3.15c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	4.16c

NO. 10 BLUE ANNEALED SHEETS

Boston 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.15c
Detroit	3.65c
Los Angeles	3.75c
New York	3.89c
Portland	4.25c
Philadelphia	3.40c
San Francisco	3.75c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.05c to 4.56c

NO 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.45c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	3.85c
Detroit	4.25c
Ft. Worth	5.50c
Los Angeles	4.75c
New York	4.35c to 4.50c
Philadelphia	4.35c
Portland	5.25c
San Francisco	4.75c
Seattle	5.25c
St. Louis	4.60c
St. Paul	4.35c
Tulsa	5.00c to 5.16c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.60c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.00c
Detroit	5.50c
Ft. Worth	6.25c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.35c to 5.50c
Philadelphia	5.55c
Portland	6.25c
San Francisco	6.00c
Seattle	6.25c
St. Louis	5.70c
St. Paul	5.60c
Tulsa	6.00c to 6.31c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.80c
Ft. Worth	4.65c
Los Angeles	4.05c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.65c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.90c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100 inch, 500 lbs. lots	6.15 to 6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 lb. lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York duty paid

Swedish, hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse, New York City Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—28	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6-inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—1	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 6
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

Better Buying on Coast

Pipe and Structural Steel Most in Demand—Small Lots Rule with Occasional Large Tonnage

SAN FRANCISCO, June 26.—(*By Air Mail*)—The past three or four weeks have been quiet in the Pacific Coast iron and steel markets with small tonnages making most of the business booked. The largest order of the week was taken by the United States Steel Products Co. and involved 2500 tons of structural shapes for the Fox theater in San Francisco. The most active market was cast iron pipe, with five large lettings, besides a number of small ones. Prices appear to be firmer this week.

Pig Iron and Coke

Foundry activity is by no means large and as a result dealers and importers report few orders booked. The Southern Pacific Co. has placed 500 tons of foundry coke with an eastern interest and has an inquiry out for 500 tons of 2.75 to 3.25 silicon foundry iron, bids on which will be opened July 6. During the week about 1500 tons of continental foundry coke arrived in port, most of which is to apply against contracts placed some time ago. Prices are the same as last week.

Coast Pig Iron Prices

Utah basic	$26.00 to 27.00
Utah foundry	26.00 to 27.00
*English (2.75 to 3.25 sil.)	25.00
*German	23.50
*Belgian	22.00
*Indian	25.00
*Dutch	22.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Only one concrete bar award involving over 100 tons was reported this week. A San Francisco jobber booked 800 tons for the Russ building, San Francisco. Several fair sized projects are up for figures. Business in the bay district, due to the carpenters' strike, has been greatly affected and few lots have been placed. Most of these have involved 20 to 40 tons. The Steel Tank & Pipe Co., Berkeley, has placed about 230 tons of rivets with an eastern producer. Demand for merchant bar material is light.

Plate awards this week totaled 200 tons and involved 100 tons for dredge pipe for Oakland, placed with the Pacific Coast Engineering Co. and 100 tons for a penstock for the Pacific Gas & Electric Co. project at Melones, awarded to Western Pipe & Steel Co. Inquiries include about 400 tons for the Southern Pacific Co., San Francisco, for tank work and 130 tons for a steel tank at San Pedro for the city of Los Angeles. No action has yet been taken on 3000 tons for new ferry boats for the Southern Pacific Co. Bids were opened this week for 1450 tons for a pipe line at La Mesa, Calif. Pending business aggregates over 10,000 tons, 5000 of which is for a pipe line at Amarillo, Texas. Prices are firmer and 2.25c c.i.f. Coast ports now appear to be the minimum obtainable, with 2.30c applying as the general run of the market.

Featuring the structural shape market was the letting of 2500 tons for the Russ building, San Francisco to the United States Steel Products Co. This is the fifth large job this company has booked in the San Francisco district this year, the total exceeding 19,000 tons. Other awards included 325 tons for a bridge over the Snake river, Oregon, placed with the Virginia Bridge & Iron Co. and 120 tons for a club-house in Golden Gate Park, San Francisco, by Dyer Bros. Pending business involves a heavy tonnage, the total well over 12,000 tons. Inquiries call for 375 tons for an under grade crossing at South San Francisco, 300 tons for a bridge at American Falls, Idaho, and 300 tons for a plant at Richmond, Calif., for the Standard Sanitary Mfg. Co. Prices are firm at 2.35c c.i.f.

Other Finished Material

Cast iron pipe awards exceeded 1300 tons. Seattle placed 550 tons, 250 tons of which was secured by B. Nicoll & Co. The National Cast Iron Pipe Co. took 103 tons for South Pasadena, Calif. B. Nicoll & Co. secured 273 tons for Seattle, 250 tons for Tacoma and 130 tons for Alhambra, Calif. Grinnell Co. was low bidder on 293 tons for Los Angeles and B. Nicoll & Co. were low on 412 tons for the same city. Pending business aggregates over 2400 tons. The Pacific Gas & Electric Co. has placed 500 tons of 5 and 8-inch standard pipe with the United States Steel Products Co. The Pacific Fruit Express Co. will open bids June 28 for 175 tons of 1 to 6-inch standard pipe with special coating.

Northwest Buying Well

SEATTLE, June 23.—Iron and steel markets are firm and steady in this section. Wholesale jobbers are well satisfied with conditions. June volume of trade has been about equal to May. There will be a general curtailment in logging and lumbering during July and August. This general shutdown will be reflected in the iron and steel trade but other buying interests are purchasing the normal quantity of supplies. Prices remain firm and the outlook is good. Demand from agricultural sections is expected to be quite active as soon as harvesting is over.

Residence and office construction in Seattle is well above normal. In the Seattle business district there are now under construction or work will be started during the next six months on projects totaling $9,000,000. This includes theatres, apartment buildings and office structures.

Pig Iron and Coke

The foundry business is active, seasonal work predominating. The plants are well stocked so that buying is not pronounced. The last order for Glengarnock pig iron was for 100 tons at $30.50 f.o.b. plant. The trade is seemingly more favorable to domestic iron, No. 1 Columbia being purchased in several orders at $27.40. This iron is furnished according to analysis desired by the buyer and prompt delivery can be given. One lot of imported iron is reported on this market in distress, it being offered at $23 f.o.b. plant. Saxon coke is quoted at $12.40 and Westphalian at $12.50. The plants have sufficient stocks for their immediate uses and about 1000 tons of imported coke are due to arrive here next month.

Bars, Plates and Shapes

The market is steady at 2.35c for bars and shapes and 2.30c for plates. Mill interests report the situation steady and firmer than a month ago. The local steel mill reports operations unchanged. Reinforcing material continues in good demand. Imported bars are causing little trouble here but are felt more keenly in the Portland district.

There is no inquiry of importange for plates since the award of 1500 tons for the Tacoma pipe line job. Light plates are moving well. Poole & McGonigle, Portland, received the award for about 600 tons of structurals involved in the new stadium at Portland.

Finished Materials

The jobbing trade finds good demand for everything out of stock. Warehouse prices are unchanged and no revision is anticipated for third quarter.

Old Materials

Steel scrap continues in good demand at $10.50 and $11 gross for local consumption and $12 and up gross being offered by exporters for desirable lots. There is little interest in cast iron although this item is nominally on a basis of $16.50 gross.

The most recent data sheets to be distributed by the American Society for Steel Treating discuss at length cutting tests of tool steels. The information was collected and prepared by Jerome Strauss, material engineer, United States naval gun factory, Washington.

German Steel Bonds Are Oversubscribed

Oversubscription of the $30,000,000 United Steel Works Corp. of Germany 6½ per cent gold bonds has been announced by Dillon, Read & Co., the International Acceptance bank, and the J. Henry Schroder Banking Corp. who headed a nation-wide offering group. The issue represented the largest foreign industrial loan to be placed in the United States.

The bonds were offered after months of negotiation. The United Steel Works Corp. was organized for the purpose of acquiring the principal fixed assets, except certain coal properties, of four leading iron and steel companies of Germany. Upon completion of the acquisition of these properties the corporation will rank as the largest industrial unit in Europe and the second largest steel company in the world. Total assets amount to $350,000,000.

The companies joining the combine are the Rheinelbe Union, Thyssen, Phoenix, and Rheinstahl. In addition to taking over the business of these concerns the corporation is acquiring 56 per cent of the stock of the Alpine Montan Steel Corp., which owns one of the largest deposits of high grade iron ore in the world.

The bonds are to be a direct obligation of the company secured by fixed assets valued at four times the sum of all underlying liens, including existing charges under the Dawes plan, the $30,000,000 of bonds and all other bonds issuable against the properties presently to be mortgaged. H. A. Brassert, American consulting engineer, valued the fixed assets of the corporation at $537,671,000. He estimates the annual net earnings will average $28,311,358 for the five years from 1927 to 1931 inclusive.

The corporation will have an authorized capital stock consisting of $190,000,000 of common stock; $11,900,000 of preferred participating certificates, Series A; and $17,850,000 par value participating certificates, Series B, or a total of $220,000,000. Of the total $208,845,000 is being issued to acquire the properties to be taken into the consolidation. The common stock will be listed on the Berlin, New York and Boston stock exchanges. The 6½ per cent sinking fund bonds are callable on any interest date after 30 days notice. The corporation agrees to provide a sinking fund sufficient to retire the entire series by maturity.

Various problems in connection with the casting of statuary bronze and precious metals in plaster were discussed by Arthur C. Godfrey of the Gorham Mfg. Co., silversmiths and jewelers, Providence, R. I., at the regular June meeting of the New England Foundrymen's association held June 9 at Boston.

Pig Iron Buying Is Heavy

(*Concluded from Page* 25)

changed at $20 for low silicon foundry and malleable, and $19 for basic. Some sellers might do fractionally better on a four-figure lot. Twelve furnaces continue in blast.

The Bethlehem Steel Corp., is blowing in another furnace at its Lackawanna plant today.

Cleveland, June 29.—The midseason buying movement so far has broken all record for sales at this time of the year, for the furnace interests with headquarters in Cleveland, collectively. Buying in volume began in the first week of June, continued to increase during each succeeding week, and with approximately 225,000 tons placed on books during the past week, the total has been brought up to around 550,000 tons. This is for third and fourth quarter shipment. Some melters have sought to cover requirements for the first quarter of 1927 at present prices, and have been refused. Furnaces represented here took a large share of the 60,000 tons bought during the past week by the American Radiator Co. Practically all of the radiator company's purchases specify No. 2 foundry iron, and the plants for which the iron was bought are Springfield, O., Kansas City, Minneapolis, Bremen, Ind., and Titusville, Pa. The United States Radiator Co. also is reported to have closed on 50,000 tons or more for various plants. Motorcar foundries that held off during the early weeks of the month came in for good size tonnages during the past week, a large share of the business written by lake furnaces being for delivery to those foundries in Michigan. A nearby melter placed a good size tonnage with a Cleveland furnace. The local makers have quoted $18, base furnace in outside territory, although $17.75 is reported from some quarters. In Cleveland the market continues quotable at $19, base furnace. Iron still is procurable at $18, base, valley, but some furnaces are quoting $18.50.

Chicago, June 29.—Forward buying of northern iron has become intensified the past week, with sales for the current buying movement now well over 200,000 tons. June is proving the heaviest selling month, save one, in six years. While the bulk of this iron is for July-August and third quarter delivery, there has been some last half coverage. Producers believe substantially all of their sales are for anticipated melt and do not represent a tendency toward heavier stocks. Sales by lake furnaces into western Michigan are reported heavy. Shipments from Chicago district furnaces are holding within 5 per cent of the best month of the year to date, and conflict with reports of decided shrinkage in foundry operations. The market on malleable and No. 2 foundry is quotable at $21, Chicago furnace, with spot carloads at $21.50. Seven of the 10 merchant stacks in this district are active. Iron is being piled at Mayville, Wis., against the expected blowing out of one stack for relining. The new tractor plant of the International Harvester Co. at Moline, Ill., is expected to begin taking iron from that company's furnaces shortly. Low phosphorus iron is quoted at about $30, delivered, and is weak. Some purchasing agents are reported seeking the inclusion in contracts of a clause protecting them in event of a price decline and are said to have been successful in the purchase of some special irons, but no malleable or foundry iron has been sold on this basis, according to sellers.

Cincinnati, June 29.—Although demand for pig iron has eased off in this district, prices continue firm. Northern iron is quoted $19.50, Ironton, and southern for Tennessee and Alabama iron, $21, base Birmingham. Sales the past week aggregated 20,000 tons, northern foundry and malleable figuring prominently in the transactions. The Lavelle Foundries, Richmond, Ind., bought 6000 tons of northern foundry for third quarter, while the Muncie Malleable Co., Muncie, Ind., purchased 3000 tons of malleable for shipment during the same period. The Louisville & Nashville railroad took 750 tons involving several grades. While the Southern Stove Works, Evansville, Ind., purchased several hundred tons of Southern. Included in the week's sales was an order for 100 tons of 7 per cent silvery iron from a southern Ohio melter.

St. Louis, June 28.—Purchasing of pig iron continues active in this district. A number of important melters came into the market during the past week, and purchased a total of approximately 50,000 to 55,000 tons. The aggregate on the movement so far exceeds 125,000 tons. There also is a decided improvement in demand for shipments, particularly for steelmakers. Inquiry pending amounts to 15,000 to 22,000 tons, including all grades. Of the latest sales reported about 45,000 tons were placed with the St. Louis Coke & Iron Co., and included 7500 tons for a manufacturer of heating apparatus and 5000 tons for an east side steelmaker. There is less shading under base quotations than has been the case in a number of months. Nothing under $21 for northern iron can be done, and southern makers are firm at that figure. The chief local producer quotes $22 to $22.50, f.o.b. Granite City.

Birmingham, Ala., June 28.—Many sales of pig iron have been made by producers of foundry iron, although the larger melters have not purchased in quantity. Inquiries still are coming in. The base price of $21 for No. 2 foundry iron is maintained, but reports still are current that $20.50 has been accepted. One of the Tennessee Coal, Iron & Railroad Co.'s furnaces at Bessemer, which produced basic iron, is down for repairs. Fourteen blast furnaces are producing foundry iron, nine basic and one ferromanganese in this state.

June Pig Iron Drops Further

Estimated Production for June Shows Total of 3,201,024 Gross Tons and Average Daily of 106,700 Tons—Lowest Since February—Active Stacks Drop to 221

PRELIMINARY figures on coke pig iron production for June, as compiled from estimates supplied by blast furnace operators, indicate still further decline in operations. Total output and average daily output reached levels the lowest since February, while active furnaces fell to the lowest since last November.

Pig iron produced in June amounted to 3,201,024 gross tons, against 3,477,820 tons in May, the loss being 276,796 tons. June, however, was a 1-day shorter month than May. Average daily output in June was 106,700 tons, which was 5487 tons per day, or 4.9 per cent, less than the 112,187-ton daily rate of the preceding month. On the other hand, the June production was the best June since 1923, when the rate was 122,262 tons per day. Against the 89,301-ton rate of one year ago, production was better by 19.5 per cent.

MONTHLY PRODUCTION

	1926	1925	1924
January	3,819,789	3,372,207	3,015,489
February	2,923,850	3,214,067	3,073,619
March	3,458,171	3,571,422	3,465,389
April	3,438,805	3,211,235	3,226,107
May	3,477,820	2,933,907	2,619,986
June	3,201,024	2,679,045	2,022,836
Total 1st half	19,819,459	18,981,883	17,423,417
July		2,665,262	1,783,457
August		2,707,171	1,882,986
August		2,707,171	1,882,986
September		2,725,885	2,053,617
October		3,017,889	2,461,727
November		3,023,267	2,514,979
December		3,249,057	2,956,389
Total 2nd half		17,388,521	13,653,155
Grand total	19,819,459	36,370,404	31,076,572

On the last day of the month, 221 of the country's 372 serviceable stacks were in operation. This represented an activity of 59.4 per cent. On May 31, the number of operating furnaces totaled 229 and represented 60.9 per cent of the country's total of 376. Of the merchant class, 1 furnace was blown in during June and 1 was blown out. Of the nonmerchant or steelworks class, 8 were blown out and none blown in.

With the abandonment of four additional blast furnaces, the country's list of serviceable stacks has been reduced from 376 to 372. The furnaces dropped are the two Paxton stacks of the Central Iron & Steel Co. at Harrisbug, Pa., and the two Watts stacks of the Virginia Iron, Coal & Coke Co. at Middlesboro, Ky.

The only furnace blown in during the month was that of the Lavino Furnace Co. at Reusens, Va. Stacks blown out or banked were: In Ohio: one Cleveland, Otis Steel Co. In Pennsylvania: Coatesville A, Bethlehem Steel Co.; one Palmerton, New Jersey Zinc Co.; and three furnaces, Carnegie Steel Co. In New York: One Lackawanna, Bethlehem Steel Co. In Maryland: Maryland D, Bethlehem Steel Co. In Alabama: Bessemer No. 4, Tennessee Coal, Iron & Railroad Co.

Active Blast Furnaces

	In blast	Total	Per Cent
June	221	372	59.4
May	229	376	60.9
April	237	376	63.0
March	235	377	62.4
February	223	382	58.5
January	225	385	58.5

JUNE PIG IRON

	No. of Stacks	No. in blast last day of month: June	May	Total gross tons
Ohio	69	50	51	771,431
Pennsylvania	132	85	80	1,067,348
Alabama	34	24	25	234,67[illegible]
Virginia	17	2	1	9,337
New York	26	15	16	186,573
New Jersey	3	....	0	.....
Illinois	25	17	17	326,463
Colorado	5	2	2	
Indiana	18	17	17	439,263
Maryland	6	5	6	
Wisconsin	5	2	2	
Kentucky	5	1	1	
Tennessee	13	2	2	58,385
Utah	1	1	1	
West Virginia	4	2	2	
Michigan	4	4	4	
Minnesota	3	2	2	75,070
Missouri	1	0	0	
Texas	1	0	0	
Spiegel and ferro—all states	....	....	....	32,477
Totals	372	221	229	3,201,024

New Tariff Policies in Canada Impending

Ottawa, June 29.—Refusal of Lord Byng, governor general of Canada, to dissolve the Canadian parliament at the request of Premier Mackenzie King led to the resignation of King and his entire cabinet Monday. The crisis rose over some scandals that had been referred to in the parliament involving the customs department. It is understood Arthur Meighan, leader of the Conservative party, has been summoned by the governor general to form a government and that he has accepted.

Meighan stands for a protective tariff policy. Hence it may not be unlikely that a new tariff policy, replacing the bars torn down recently by King's government, may be one result of Monday's change in cabinets.

Cincinnati Molders Settle

Cincinnati, June 29.—Having been granted an increase of 50 cents a day, approximately 400 iron and brass molders, members of the Iron Molders' Local No. 4, returned to their places of employment today. They had been on a strike since June 1 and were asking for an increase from $7 to $8 a day. They compromised with the employers for $7.50 a day.

AVERAGE DAILY PRODUCTION

	1926	1925	1924	1923	1922
Jan.	107,089	108,781	97,273	104,136	53,090
Feb.	104,423	114,788	105,987	106,925	58,220
Mar.	111,554	115,207	111,787	113,664	65,674
Apr.	114,627	107,041	107,537	118,210	69,005
May	112,187	94,642	84,515	124,790	74,495
June	106,700	89,301	67,427	122,262	78,748
July	.....	85,976	57,531	118,860	77,517
Aug.	.....	87,328	60,741	111,254	58,408
Sept.	.....	90,862	68,454	103,917	67,466
Oct.	.....	97,351	79,410	101,375	84,827
Nov.	.....	100,775	83,832	96,373	94,870
Dec.	.....	104,808	95,367	93,952	99,468
Ave.	109,499	99,645	84,908	109,659	73,563

Carry On Fight Against Foreign Steel

Chicago, June 29.—The Concrete Reinforcing Steel institute has been successful in its fight against the use of foreign steel in the public school buildings of Philadelphia and hereafter specifications will call for "American-made steel." A further statement by the institute says:

"We have petitioned the director of customs at Washington to invoke the provisions of the present law, which call for the marking of imported goods with the country of origin. In view of the fact that certain foreign steel bars are close imitations of well known American reinforcing steel bars, it is quite possible that a large quantity of foreign steel is being sold without the buyers' knowledge of its source. With the present law enforced, we feel that the steel products of American mills will outdistance their foreign competitors in the territory affected."

Plans More Materials Testing

American Society for Testing Materials in Twenty-ninth Annual Convention at Atlantic City Expands Research Program as It Grows

Organization with 4000 Members Doubles Its Membership in Ten-Year Period—Standard Specifications Now Cover a Wide Range of Materials

EACH year the value of the American Society for Testing Materials in its multiplicity of services to industry is attested by the growth in its program, the extension of its committee activities and the increased attendance at its sessions. Its influence upon vital research, and the contributions to methods of testing and to specifications for materials ever become more far reaching.

The twenty-ninth annual convention at Atlantic City, N. J., June 21-25, marked a new high point, with a registered attendance of nearly 1000 members, a program divided into 13 sessions and committee and subcommittee meetings filling every possible idle moment of the schedule. The society now has an active membership of more than 4000, or more than twice its roll ten years ago.

Features of the metals session covered the report of marked advance in magnetic analysis of heat-treated steel, some new developments on the effect of minute corrosion upon the ultimate strength of metals tested under so-called fatigue conditions and a stabilizing of the practice followed in examining metals under the X-ray.

The first lecture, under an arrangement suggested last year to commemorate the life and service of the first secretary, Edgar Marburg, was delivered by Prof. Arthur N. Talbot, University of Illinois. An instructive lecture on reclamation in relation to the nation's water supply was delivered by F. H. Newell, former chief engineer of the government reclamation service. New officers, as elected by letter ballot, are shown in the accompanying box. Recreation features, as usual included golf and tennis tournaments.

Magnetic Test Provides Heat Treatment Check

WROUGHT iron, cast iron and magnetic testing divided interest at the opening session, June 21. Announcement of definite accomplishment in magnetic testing as applied to inspection subsequent to heat treating, was the feature which marked this session. Frank P. Fahy, consulting engineer, New York, chairman of the committee which has had this investigation in charge reviewed the work which has been done since this problem was brought under consideration in 1918. Mr. Fahy introduced Thomas Spooner, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. who gave a comprehensive paper outlining the results of a magnetic analysis of about 150 pounds of ½-inch square, high-speed steel.

Mr. Spooner showed conclusively that magnetic characteristics provide a sensitive measure for determining the response or lack of response of material to a heat treatment process. His study covered a range of quenching temperatures from 2100 to 2400 degrees Fahr. and drawing temperatures to 1150 degrees Fahr. The most suitable tests are said to be those involving an alternating-current magnetic test at fairly high magnetizing forces. The author recommended magnetic tests for three purposes, namely: To determine the uniformity of material as to chemical content and as a function of mill practice before heat treatment; to test the uniformity of quenching operations, checking the temperatures which had been used and the oxidation and decarbonization; and to test the uniformity of drawing operations.

Consideration is being given the possibility of detecting blowholes in large castings by magnetic analysis. This is said to be possible where large defects of this nature exist, but where the blowholes constitute only a small portion of the volume, success is held in doubt.

The committee on wrought iron, of which H. J. Force, engineer of tests, Delaware, Lackawanna & Western Railroad Co., Scranton, Pa., is chairman, recommended that the title of specifications for merchant bar iron be changed to read, "standard specifications for common iron bars." The committee is giving consideration to the effect of annealing staybolts after they have been threaded.

Prof. A. N. Talbot, University of Illinois, Urbana, Ill., presented a complete paper on tests of cast iron pipe. This was prepared from data secured by Prof. Talbot and F. E. Richart, and covered 25 lots of 6-inch cast-iron pipe made by standard methods of sand casting, or by pouring into two types of centrifugal molds, the latter benig metal and refractory material, respectively. A comparison between the products given by the three methods may be made from the tabular data submitted, although the point was stressed that the paper dealt with methods of tests rather than the comparative properties of the pipe tested. He recommended test strips cut from the pipe uniformly ½-inch in thickness and with a width covering the full thickness of the wall

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Manager, Eastern Clay Products association, Philadelphia.

of the pipe 12 inches long with a load applied equally at the one-third points of a 10-inch span.

In discussing this paper, J. T. MacKenzie, American Cast Iron Pipe Co., Birmingham, Ala., recommended the use of special test strips. He stated that ability to bend is more important in pipe than ability to resist bending and for this reason, resilience is a valuable property.

Thomas H. Wiggin, consulting engineer, New York, raised the question of whether the testing of a standard bar poured from pipe metal is not a test of a test bar, rather than a measure of the quality to be expected in the pipe. He called attention to recommended tests of iron castings wherein exceptionally small test pieces are removed and advised a study to see whether some test piece sufficiently small to permit tapping and plugging the pipe where the specimen is removed, might not be found.

J. T. MacKenzie, in a paper presenting the results of comparative tests on a large number of bars made from identical metal mixtures, compared the two existing standard test bars for cast iron with a new bar proposed by the committee of the American Foundrymen's association. The first two mentioned are the so-called standard bar, of rectangular section 2x1 inches, 26 inches long and broken by a load at the center, while supported on knife edges 24 inches apart; the arbitration bar, round 1.25 inches in diameter, 15 inches long and broken on 12-inch centers. The new bar is 1.2 inches in diameter, round section, 20 inches long and broken on supports—placed 18 inches apart.

All the bars made by Mr. MacKenzie were poured in sand molds, one to a flask, the mold blacked with care to assure a surface free from and cast on end. It was found that the strength varied in inverse proportion to the total carbon multiplied by 1/3 the silicon. The author stated that the new bar gives the best results, both in the load and deflection tests.

Correlates Research Data of All Bodies

IN A SCHOLARLY address delivered at the evening session, Tuesday, W. H. Fulweiler, United Gas Improvement Co., Philadelphia directed attention to the importance of little things in standardized methods of testing. He stated that the two main functions of the society are to establish methods of testing and to provide specifications for materials and of these the former is the more important. He urged particularly that test apparatus should be specifically described, warning of the danger of leaving details to the judgment of individuals.

H. F. Moore, University of Illinois, Urbana, Ill. presented the report of the committee on the correlation of research. This committee has for its purpose the compilation of information on research being conducted by various technical bodies, it acts as a clearing house for information of mutual importance, and suggests the studies of those properties of materials about which information is needed. Prof. Moore announced the formation of a new committee to investigate the yield point of structural steel. M. O. Withey, University of Wisconsin, Madison, Wis., is chairman, of this body which will investigate this problem in the interest of the structural engineer, the steel manufacturer and the testing engineer.

J. A. Capp, General Electric Co., Schenectady, N. Y., chairman of the committee on methods of testing reported the work accomplished upon the following lines: Mechanical testing, impact testing, volatility, plasticity and consistency, determination of water, size and shape, and methods for determining density.

The report of the subcommittee on mechanical testing, covered proposed methods of testing thin sheets. This was supplemented by a paper by R. L. Templin, Aluminum Co. of America, New Kensington, Pa. on the same subject. An extensive investigation conducted on metal ranging from 1/64 to ¼-inch thick, disclosed that the dimension of a tension test specimen from a thin sheet may vary considerably without affecting the tensile strength or yield points. The author recommended choosing a specimen on the basis of ease or preparation, duplication, handling and testing. On this basis, was suggested a test piece, 9 inches long, with a width at the grips of ¾-inch, and at the test section of 0.5-inch affording a 2-inch gaged length and with 2¼ inches to the point where the width increases to provide for gripping the specimen.

M. F. Sayre, Union College, Schenectady, N. Y. described a new type mirror extensometer, adapted to test specimens from 2 to 8 inches in gage length and measuring strains to millionths of an inch.

One of the largest sessions both in point of attendance and in the length and meat of the program was that on Wednesday morning, devoted to steel. J. H. Gibboney, president elect and for many years a member of the committee on steel presided.

In presenting the report of this committee, F. M. Waring, engineer of tests, Pennsylvania Railroad system, Altoona, Pa. chairman, presented a number of revisions in existing standards for railway and automotive equipment. For example, the tentative specifications for open-hearth carbon steel rails have been so extensively revised that practically an entirely new standard was submitted to supersede the present standards, published in 1924. Other proposed tentative specifications which were proposed by the committee and adopted as tentative by the member vote includes those for open-hearth steel girder rails, soft steel track spikes, steel tie plates commercial quality hot-rolled steel bars, cold-finished bar steel and cold-finished shafting, cold-rolled strip steel, forged or rolled steel pipe flanges for high temperature service, and lap-welded and seamless steel pipe for high temperature service. J. B. Young, Reading Co., Reading, Pa., was elected chairman of this important committee for next year.

Chairman George K. Burgess, director, bureau of standards, Washington, offered a report of the joint committee on the investigation of the effect of phosphorus and sulphur in steel, which gave definite conclusions from an exhaustive series of tests, involving 5400 measurements of physical properties on rivet steel of the following limits; Carbon, 0.09 to 0.15; manganese, 0.35 to 0.64; phosphorus, 0.005 to 0.024; silicon, 0.002 to 0.057; and sulphur from 0.03 to 0.18 per cent. Within the range of the analyses given, and the committee particularly stressed this limitation. The report showed that sulphur present in commercial rivet steel up to at least 0.06 per cent is not detrimental. Above this point, the value of the following properties decrease with the increase in sulphur content. Percentage of elongation and reduction of area for material tested perpendicular to the direction of rolling, in the natural, annealed and quenched condition; the Charpy and Izod impact tests for all three conditions of the material tested parallel and perpendicular to the direction of rolling.

An interesting paper by S. H. Ing-

berg and P. D. Sale, bureau of standards, Washington, outlined the result of tests of higher temperatures on typical rolled steel shapes and one hollow cast iron structural member. These were designed to show the weakening in such materials in buildings suffering fires. A rise in compressive strength in rolled material encountered at about 250 degrees Cent., was held by the authors to have no significance of value. The point of failure takes place in the region from 550 to 700 degrees Cent. At the temperatures encountered by such materials exposed to building fires, the failure occurred at a point between the yield point and the ultimate strength of the material under test.

O. B. Shultz, Lima Locomotive Works, Lima, O., presented a paper outlining the ideal procedure to be followed in steel making, rolling blooms and bars, forging and heat treating carbon-vanadium forgings for locomotive work. In the closing paper of the steel session, presented by J. R. Dawson, Union Carbide & Carbon Research Laboratories Inc., New York, an interesting series of tests on welds of ⅜-inch plate were described and the results offered. Using the oxyacetylene methods, a series of plates, developing from 52,000 to 58,000 pounds per square inch tensile strength were welded together, using the double V-type joint and employing commercial steel rods of 0.20 carbon, and with manganese and silicon high. The welded plates were cut in strips, perpendicular to the line of welding and these test pieces developed a strength averaging 40 per cent stronger than the original plates.

The first Edgar Marburg lecture, established through popular subscription among members in memory of the first secretary of the society was presented Wednesday afternoon by Author N. Talbot, University of Illinois, Urbana, Ill., past president and honorary member. The subject was, "Research and Reinforced Concrete as an Engineering Material."

Surveying Refractories for Metallurgical Use

THE general committee of the society devoted to the study of tests and specifications for refractories and headed by W. H. Fulweiler, United Gas Improvement Co., Philadelphia, reported on a survey on refractories for open-hearth furnace use, and reviewed the co-operative work which has been done on firebrick by a number of interested agencies. Approval was extended for the attachment to this report of the proposed tentative specifications for malleable furnace refractories, including blocks for the sidewalls, bung brick, etc. These were prepared by a joint committee sponsored by the American Ceramics society, American Foundrymen's association and other interested organizations of which L. C. Hewitt, Laclede-Christy Clay Products Co., St. Louis, is chairman and J. L. Cummings, S. Obermayer Co., Chicago, is secretary. These specifications have been influenced in a marked degree by data contributed through tests of more than 50 different kinds of refractories, made under direction of M. C. Booze, Mellon Institute of Industrial Research, Pittsburgh.

J. H. Gibboney, Norfolk & Western Railway Co., Roanoke, Va., chairman of the corrosion of iron and steel presented the report of that committee at the opening of the session, Thursday, June 24. This outlines in detail the progress of various long time tests on iron and steel sheets which have been exposed to the action of the atmosphere or immersed at Ft. Sheridan, Chicago and Annapolis, Md. The experiments have been in progress about ten years. At Ft. Sheridan, 70 per cent of the noncopper bearing light gage sheets have failed. At Annapolis the failures have been confined to the light, low-copper, open-hearth steel and low-copper pure iron.

The subcommittee of this group appointed to investigate corrosion presented a series of proposed specifications, all of which were approved as tentative. These included the following: Coating on zinc coated wire, galvanized iron or steel telephone and telegraph line wire, and galvanized iron or steel tie wire. A comprehensive program for the collection and testing of metallic coated products, including hardware, tubes and fitting material and embracing the various known methods of applying coatings of zinc, aluminum, cadmium and lead, was announced by another subcommittee.

A paper by T. H. Nelson, vice president, William T. Bate & Sons Co., Conshohocken, Pa., outlined the conditions existing in the application of chromium alloys of iron and steel. The author deprecated the tendency to stretch the application of the various patented alloys of this group to cover conditions which normally cannot be met, and stated that decidedly different properties are encountered depending upon the percentages of chromium carried. He showed the applications of alloys containing more than 16 per cent of chromium to various casting and fabricating processes now in use.

Ancel St. John, consulting engineer, New York, expressed regret and a measure of rebuke for the ill-advised claims extended by what he termed unenlightened salesmen for the products which they sell. He recounted the prejudice against the whole class of chromium alloys which followed the shattering of a bar of this material when dropped during the inspection by a group of engineers. In this case the product probably had desirable properties at certain temperatures or under certain conditions, but these merits were entirely vitiated by an accident.

D. J. McAdam Jr., United States naval experiment station, Annapolis, Md. presented an interesting paper showing a new phase of the fatigue effect on metals subjected to repeated stress. He presented evidence to show that when slight corrosion exists, such as may be visible only under microscopic examination, in test pieces subjected to fatigue, the resistance of the material is lowered. In steel the damaging effect of corrosion is increased as the steel is harder. Various samples of carbon and alloy steel, ingot iron and monel metal were tested and the breakage or point of failure, shown under the microscope appeared at the various points in the specimen attacked by corrosion.

W. H. Finkeldey, New Jersey Zinc Co., Palmerton, N. J., presented an unusually complete summary with photomicrographic studies of a series of tests on zinc coated wire. This paper showed the penetration of zinc into the surface of the wire, and the growth of this alloy on continued heating.

Papers by R. R. Moore, McCook field, Dayton, O., on the effect of grooves, threads and corrosion on fatigue and by P. L. Irwin, on the fatigue of metals by direct stress completed the session assigned to these particular subjects.

Grand Rapids Blow Pipe & Dust Arrester Co., Grand Rapids, Mich., advises it has not changed its name to the Newcomb David Co., as stated a week ago in IRON TRADE REVIEW.

Foundries Honor Henderson

British Institute Elects Labor Leader Life Member—Former "Sand Rat" Speaks at Convention in London—Exchange Papers Contributed from United States, France, Belgium—German Secretary on Platform

THE twenty-third annual convention of the Institute of British Foundrymen, London, June 15-18, was to an extent, overshadowed by the continued coal strike, but this unfortunate industrial event did not prevent a large and useful gathering. In the attendence, France, Belgium and Sweden were represented, and a notable event was the appearance on the platform of the secretary of the German Foundry association who was accorded a cordial welcome at the closing session, and promised an exchange paper.

Papers were contributed from America, Belgium and France. The time available after the meeting was devoted to visits to a number of foundries and engineering works in London and neighborhood. The social events included a reception at the Spring Gardens artists' gallery, a motorcoach trip to Hampton Court and a visit to Windsor by steamboat up the Thames. The international foundry trades exhibition at the Agricultural Hall, Islington, London, although generally voted a success, would have been larger, but for the transport difficulties incident to the coal strike.

The banquet at the Hotel Cecil on June 17 was largely attended. Sir William Larke, K. B. E., of the National Federation of Iron and Steel Manufacturers promised to supply any future statistics with regard to foundry products in connection with the monthly publications of the federation. The president announced the receipt of a telegram from the Spanish Foundrymen's association, conveying an invitation to the federation to take part in a conference at Barcelona. The principal speaker was the Right Hon. Sir Alfred Mond, Bart., P. C., M. P.

The toast of the Institute of British Foundrymen proposed by Sir Alfred was responded to by the president, V. C. Faulkner. Other speakers were, Oliver Stubbs, John Cameron, J. P., the retiring president, and George C. Pearce, the president of the London branch. A dinner to the overseas guests was given by F. W. Bridges Ltd., the organizers of the international foundry trades exhibition at the Agricultural Hall, Thursday evening, June 17.

Piquancy was imported to the opening session, held in a large room adjoining the foundry exhibition, by the presence on the platform of the Rt. Hon. Arthur Henderson, P. C., M. P., a member of the late labor government, universally recognized as representing the best type of trade unionist. Mr. Henderson, who attended to give to the British and foreign delegates the official welcome to the city, has, it transpired, occasionally met leading foundrymen in a somewhat more controversial capacity when championing the cause of the operatives in wages and similar matters. The retiring president, Mr. Cameron, described the labor leader as a thorough foundryman who had made his mark and attained distinction. The hearty welcome given to Mr. Henderson appeared to reflect the pleasant relations between employers and employed which are a feature of the industry.

Mr. Henderson described himself as a product of the iron foundry, molding castings before he began his attempts to mold public opinion, being what is commonly described as a "sand rat", or an artist in sand. He followed his speech by presenting the Oliver Stubbs medal to A. R. Bartlett, of London, for services of outstanding merit to the foundry industry. The retiring president announced the decision of the council to make Mr. Henderson an honorary life member of the institute. The announcement was received with applause, and the recipient of the honor declared that he never regretted the 14 years devoted to foundry work which brought him into all the activities of working-class life, and for 23 years he had represented the molder in the house of commons.

Mr. Cameron, retiring from the chair welcomed his successor, Mr. Faulkner, as a metallurgist and a journalist who had made his foundry paper indispensable. J. T. Goodwin, general manager, Sheepbridge Iron Co., Ltd., was chosen senior vice president, and S. H. Russell, G. S. Gussell & Sons, Leicester, junior vice president. Oliver Stubbs, F. J. Cook and R. O. Patterson were re-elected trustees, and A. R. Bartlett, W. Lambert, H. Pemberton and J. Shaw, members of council. The president announced the receipt of a telegram from M. Pisek, president of the Czecho-Slovak Foundrymen's association, conveying best wishes for a successful gathering.

The newly-elected president congratulated the institute on its rapidly increasing importance and the wide spirit of recognition of its authority. He said it might be necessary in the future to hold two meetings annually, one in London devoted purely to the reading of technical papers, and the second in the provinces or abroad. There is a great need to co-ordinate and tabulate the large amount of technical literature available. It is time that the government recognized the foundry industry as a key industry, and the co-operation of engineers is necessary. General engineering should be the best friend of the foundry, but sometimes it is its worst enemy, apparently caring little for anything beyond the failing production of a cheap article. The engineers should give the foundry fullest co-operation and confidence. They would gladly admit engineers as members with the object of mutual consideration of joint problems.

A handsome medal was presented to the retiring president, Mr. Cameron, and a similar tribute was paid to R. V. Patterson, a former president. The medal is a substitute for the illuminated address formerly given to the retiring president.

In the reading of papers, precedence was given to the American exchange paper "Quality in Quantities" by Arnold Lenz, Saginaw Products Co., Saginaw, Mich., an abstract of which was read by Vincent Delport, European manager, IRON TRADE REVIEW. The author indicated many ways in which mass production can be introduced into foundry work, greatly increasing productive economy, while frequently improving quality.

E. V. Ronceray read an abstract of the French exchange paper by R. Lemoine, Paris, entitled, "The Practical Utilization of Apparatus for Measuring the Permeability and Cohesion of Molding Sands." The author expressed appreciation of the methods outlined by the committee for testing sands of the American Foundrymen's association which most nearly approaches the object in view, but urged

the necessity of more carefully selecting mixtures and much more efficient control, with the purpose of assuring constancy of permeability and cohesion. It is possible by proper treatment to obtain much greater uniformity of results.

A summary of the Belgian exchange paper entitled, "Results Obtained in the Improvement of the Qualities of Cast Iron" by Louis Piedboeuf, was read by G. Masson, the president of the Belgian technical association.

At the opening of the second day's proceedings, J. G. Pearce, director British Cast Iron Research association, announced a modification with regard to the membership of that body under which members of the Institute of British Foundrymen will be admitted as associates at a reduced subscription of £1 per annum, and the associates can take advantage of the special research in regard to individual problems.

The first paper read was by E. J. Yates, B. Sc. (Met.) entitled, "Some Notes on the Production of Cylinder Pig Iron to Fracture and Analysis." The speaker dealt with the relative variations of fracture and analysis as regards the quality, emphasizing the utility of both methods of testing.

The paper, "Some Notes on the Chemistry of the Cupola" by F. C. Thompson, D. Met., B. Sc., and M. L. Becker, B. Met., was read by Mr. Becker. The authors made various suggestions in regard to the most economical and effective use of the heat, dealt with the reactions.

The paper on "Nonferrous Metallography" was presented by J. S. Glen Primrose, A. R. T. C., A. I. M. M., Manchester, and was welcomed by several speakers as of great practical value. The concluding paper was "Cast Iron for Electrical Machines" by J. H. Partridge, B. Sc., University of Birmingham. The paper gave the results of investigations carried out at the suggestion and under the direction of Professor T. Turner with the object of indicating the effect of some of the common elements of the magnetic properties of cast iron, and showing that this material has a promising future in the electrical industry.

New Sheet Metal Ware Figures Compiled

Washington, June 29.—New industrial statistics covering output of galvanized sheet metal ware have been issued by the department of commerce, and will be continued each month hereafter. The figures just released cover April production as reported to the department by 12 manufacturers, comprising a large portion of the industry.

April output is given as 136,141 dozens, valued at $490,992, as compared with 180,573 dozens valued at $635,897, in March. The galvanized ware included in this summary is the product resulting from dipping made up shapes in molten zinc and not utensils of galvanized sheets. The classifications are pails and tubs and other galvanized sheet metal ware. Comparisons follow:

PAILS AND TUBS
In Dozens

1926	Production	Stocks on hand end month	Orders shipped
January	148,587	115,087	150,430
February	138,159	125,002	124,955
March	120,396	125,837	116,036
April	91,707	109,858	109,228

OTHER
In Dozens

1926			
January	38,526	61,335	43,441
February	51,658	62,507	48,620
March	60,177	66,989	56,119
April	44,434	60,731	48,182

Steel Furniture Sales Show Large Drop

Washington, June 29.—May orders for steel furniture were valued at $2,213,060, the lightest since November, according to returns to the department of commerce by 32 manufacturers. Shipments in May of $2,351,932 gained over April but unfilled orders dropped. Shelving sales of $580,995 were the lightest since August, but were ahead of May 1925 when the total was $523,426. Shipments decreased from April but unfilled orders gained. Further comparisons of sales, shipments and unfilled orders follow:

BUSINESS GROUP

1925	Orders received	Shipments	Unfilled Orders
May	1,855,552	1,918,869	1,383,424
Total (5 mos.)	$10,025,936	$9,867,165	$7,290,061
June	1,792,656	1,805,599	1,390,540
July	1,823,435	1,810,754	1,445,897
August	1,664,649	1,688,965	1,358,386
September	1,969,769	1,816,484	1,535,231
October	2,170,076	2,130,498	1,406,117
November	1,975,117	1,885,505	1,496,242
December	2,454,277	2,418,577	1,531,505
1926			
January	2,652,208	2,434,205	1,760,573
February	2,272,555	2,183,948	1,833,862
March	2,289,276	2,387,886	1,718,189
April	2,356,403	2,323,447	1,576,103
May	2,213,060	2,351,932	1,537,826
Total (5 mos.)	$11,783,502	$11,681,418	$8,426,553

SHELVING

1925			
May	523,426	549,272	372,296
Total (5 mos.)	$2,758,177	$2,700,890	$2,138,404
June	501,182	514,117	360,089
July	510,815	482,187	398,973
August	516,694	452,716	447,255
September	624,676	542,173	511,689
October	730,911	622,471	626,933
November	686,814	574,905	739,831
December	620,947	788,461	570,941
1926			
January	582,016	578,161	584,824
February	656,367	603,501	633,935
March	583,701	726,413	604,991
April	704,432	699,370	570,693
May	580,995	617,260	587,310
Total (5 mos.)	$3,107,511	$3,224,705	$2,981,753

Plate Bookings in May Highest Since 1924

Washington, June 29.—Bookings of fabricated steel plates in May, totaling 46,473 tons were the heaviest since December, 1924, when 49,559 tons were booked, according to reports to the department of commerce from 36 manufacturers. Oil storage tanks showed the largest gain, totaling 6042 tons in April and 15,728 tons in May. Bookings for the five months of 1926 totaled 172,170 tons compared with 120,485 tons in the same months of 1925. Further comparisons follow:

	Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks and miscellaneous
1923	**539,043**	**296,128**	**44,576**	**9,815**	**141,359**
1924	**313,109**	**123,368**	**43,747**	**12,601**	**108,046**
1925—					
May	**27,684**	**8,503**	**2,118**	**404**	**10,141**
Tot. 5 mo.	**120,485**	**25,593**	**17,801**	**6,530**	**44,689**
June	**34,402**	**16,327**	**2,192**	**373**	**11,349**
July	**29,272**	**16,327**	**2,284**	**373**	**11,349**
Aug.	**29,261**	**7,500**	**3,671**	**1,240**	**11,826**
Sept.	**23,983**	**8,458**	**1,510**	**425**	**10,600**
Oct.	**28,338**	**8,076**	**1,482**	**2,500**	**12,621**
Nov.	**28,557**	**7,492**	**4,559**	**581**	**9,491**
Dec.	**31,585**	**7,714**	**3,172**	**407**	**14,776**
Totals	**325,883**	**87,541**	**36,621**	**12,658**	**129,511**
1926					
January	**25,077**	**8,165**	**2,286**	**1,720**	**9,434**
February	**30,809**	**9,630**	**4,068**	**806**	**9,315**
March	***37,120**	**12,629**	**5,048**	**377**	**13,075**
April	***32,691**	**6,042**	**5,261**	**1,857**	**17,047**
May	**46,473**	**15,728**	**4,190**	**1,742**	**19,608**
Tot. 5 mo.	**172,170**	**52,194**	**20,853**	**6,502**	**68,479**

*Revised.

Foundrymen Nominate 1926-27 Officers

Meeting in Detroit recently, the nominating committee of the American Foundrymen's association unanimously made the following nominations for officers and directors of the association for 1926-27: President, S. W. Utley, vice president and general manager, Detroit Steel Casting Co., Detroit; vice president, S. T. Johnston, vice president, S. Obermayer Co., Chicago; directors to serve three year terms each, Martin W. Henley, vice president, Frazer & Jones, Syracuse, N. Y.; N. K. B. Patch, secretary and works manager, Lumen Bearing Co., Buffalo; A. B. Root Jr., mechanical engineer, Hunt-Spiller Mfg. Corp., Boston; S. C. Vessy, president, W. W. Sly Mfg. Co., Cleveland; and L. C. Wilson, vice president and general manager, Federal Malleable Co., West Allis, Wis.

The nominating committee consisted of C. R. Messinger, chairman, G. H. Clamer, L. W. Olson, P. T. Bancroft, L. S. Murphy, Charles Suess and E. S. Van Dalson.

Kettler Mfg. Co., Houston, Tex., has increased capital from $10,000 to $25,000.

Exports by Destination Listed for May

EXPORTS of iron and steel products by destination are listed in the accompanying tables, as supplementary to the data published in the June 24 issue of IRON TRADE REVIEW. The following statistics show the shipments of iron and steel from the United States by country of destination for May, the first five months of 1926 and 1925. Destination for steel bars, galvanized and black sheets also are listed.

Canada as usual was the largest importer in May taking 76,797 tons. Japan and Chosen were second in size, taking 21,976 tons. Of the total for Japan, 8831 tons was black sheets. Mexico imported 7613 tons in May, Philippine Islands 6500 tons and Cuba 5723 tons. Other countries and the tonnages they took in May are as follows:

ORIGIN OF IRON, STEEL IMPORTS

Gross Tons

	Steel bars	Steel ingots, etc.	Steel scrap	Cast iron pipe
Austria	14	.....	.....	.....
Belgium	7,253	507	.....	1,130
Czechoslovakia	3	3	.....	.....
France	2,492	4,131	.....	5,996
Germany	837	466	.....	.....
Netherlands	557	54	.....	647
Norway	84	.....	.....	.....
Sweden	1,052	207	.....	.....
United Kingdom	77	8	.....	2
Canada	17	1	1,937	.....
Cuba	.....	.....	2	.....
Totals	12,386	5,377	1,939	7,775

DESTINATION OF EXPORTS BY PRODUCTS IN MAY

Gross Tons

	Steel bars	Galvanized sheets	Black sheets
Europe	.....	482	68
United Kingdom	1,427	.....	.....
France	.....	.....	428
Canada	5,866	3,386	6,258
Mexico	287	788	.....
Central America	245	420	109
Cuba	322	955	31
Argentina	.....	420	.....
Chile	493	377	169
Brazil	.....	790	.....
Colombia	170	422	.....
Other South America	228	354	168
British India	.....	891	.....
China	353	353	570
Japan, including Chosen	375	226	8,831
Other Dutch East Indies	.....	650	.....
Philippine Islands	392	1,844	472
Australia	111	.....	311
Other countries	260	838	.....
Totals	10,529	13,196	17,415

EXPORTS BY DESTINATION DURING MAY

Gross Tons

TO:	May 1926	January through May 1926	January through May 1925
Azores and Maderia Islands	9	9	3
Belgium	45	1,005	4,807
Bulgaria	.....	312	3
Czechoslovakia	.....	.....	13
Denmark	148	491	508
Finland	51	784	813
France	778	6,691	2,021
Germany	5	794	1,468
Greece	83	1,143	1,126
Hungary	.....	.....	3
Iceland	.....	.....	1
Irish Free State	.....	59	22
Italy	3,682	18,808	16,077
Lithuania	.....	2	.....
Malta, Gozo and Cyprus Islands	.....	113	4
Netherlands	225	681	1,155
Norway	116	767	1,486
Poland and Danzig	.....	17	30
Portugal	1	373	266
Rumania	208	1,723	147
Soviet Russia in Europe	4	2,806	98
Spain	23	522	1,880
Sweden	18	284	241
Switzerland	57	84	61
Turkey in Europe	36	672	976
United Kingdom	3,037	21,183	19,085
Yugoslavia and Albania	.....	.....	220
Canada	76,797	329,301	237,374
British Honduras	24	67	57
Costa Rica	119	1,086	1,657
Guatemala	592	6,671	2,628
Honduras	303	1,825	2,766
Nicaragua	254	3,199	2,079
Panama	470	3,566	4,496
Salvador	4,629	9,725	8,143
Mexico	7,613	41,015	50,333
Miquelon and St. Pierre Islands	.....	5	2
Newfoundland and Labrador	61	260	955
Bermuda	20	73	83
Barbados	4	32	7
Jamaica	73	577	544
Trinidad and Tobago	837	2,794	1,933
Other British West Indies	208	437	420
Cuba	5,723	38,632	58,489
Dominican Republic	381	2,487	2,231
Dutch West Indies	1,061	3,028	1,250
French West Indies	1	4	10
Haiti	184	1,763	873
Virgin Islands of the United States	29	284	99
Argentina	2,182	26,398	56,071
Boliva	18	425	1,040
Brazil	2,770	16,526	18,894
Chile	5,773	24,604	19,990
Colombia	5,730	26,715	23,403
Ecuador	257	788	1,144
Falkland Islands	.....	2	.....
British Guiana	27	106	296
Dutch Guiana	58	454	18
French Guiana	.....	46	.....
Paraguay	3	22	70
Peru	2,453	16,865	6,162
Uruguay	1,399	3,504	2,054
Venezuela	3,487	27,832	14,112
India	2,706	15,240	8,077
British Malaya	656	4,718	2,097
Other British East Indies	.....	.....	1
Ceylon	8	68	37
China	3,740	15,751	12,075
Java and Madura	740	4,577	3,415
Other Dutch East Indies	1,405	10,388	4,324
Hejaz, Arabia and Mesopotamia	.....	.....	11
French Indo-China	1	1	.....
Hongkong	110	785	1,671
Iraq	522	582	.....
Japan and Chosen	21,976	118,241	49,764
Kwantung	167	3,698	772
Palestine and Syria	41	134	200
Persia	43	43	1,038
Philippine Islands	6,500	27,198	21,375
Siam	.....	35	58
Soviet Russia in Asia	.....	13	.....
Turkey in Asia	23	73	9
Australia	1,462	9,132	9,401
British Oceania	9	46	24
French Oceania	25	52	78
New Zealand	134	1,701	767
Other Oceania	.....	.....	3
Belgian Congo	.....	1	.....
British East Africa	.....	17	1
British South Africa	1,001	3,089	16,201
British West Africa	.....	18	37
Egypt	1	2,190	1,195
Algeria and Tunis	.....	2	.....
Other French Africa	.....	4	1
Italian Africa	.....	4	.....
Liberia	5	44	1
Morocco	.....	62	24
Portuguese East Africa	73	708	488
Other Portuguese Africa	4	21	106
Total	173,418	869,077	705,448

Exports of Machinery

In number except where otherwise specified

	—May— 1926	1925	Eleven months ended May 1926	1925
Lathes	.....	144	771*	1,136
Boring and drilling machine tools	.....	146	984*	1,902
Planers, shapers and slotters	.....	21	126*	270
Bending and power presses	.....	27	252*	356
Gear cutting machines	.....	10	138*	437
Milling machines	.....	98	528*	664
Punching and shearing machines	.....	16	105*	174
Power hammers	.....	16	111*	203
Other metalworking machinery and parts, pounds	.....	1,328,307	8,674,263*	.....
Engine lathes	14	.....	121**	.....
Turret lathes	17	.....	57**	.....
Other lathes	41	.....	291**	.....
Vertical boring mills and chucking machines	5	.....	45**	.....
Thread cutting and automatic screw machines	44	89	819	791
Knee and column type milling machines	11	.....	139**	.....
Other milling machines	22	.....	218**	.....
Disk type gear cutting machines	2	.....	3**	.....
Other gear cutting machines	10	.....	157**	.....
Vertical drilling machines	44	.....	168**	.....
Radial drilling machines	8	.....	42**	.....
Sensitive drilling machines	281	.....	544**	.....
Other drilling machines	81	.....	636**	.....
Shapers and slotters	23	.....	373**	.....
Planers	.....	.....	117**	.....
External cylindrical grinding machines	44	172	676	1,875
Internal grinding machines	9	25	285	245
Metalworking tool sharpening machines	.....	130	626**	.....
Other metal grinding machines	.....	.....	.....	.....
Sheet metalworking machines, pounds	86,832	143,495	994,319	1,328,284
Plate metalworking machines, pounds	19,405	.....	85,594**	.....
Rod or wireworking machines, pounds	22,738	.....	187,827**	.....
Forging machinery, pounds	427,803	.....	2,375,846**	.....
Rolling mill machinery, pounds	421,323	.....	2,210,139**	.....
Other power-driven metalworking machinery and parts, pounds	453,168	.....	3,517,885**	.....
Other metalworking machinery (total)	$314,942	$367,722	$4,123,493	$3,282,425
Cranes with swinging booms	9	9	87	62
Other cranes	22	26	198	189
Hoists and derricks except mining	707	410	5,930	5,005
Sprocket and other power transmission, pounds	335,874	211,333	3,922,710	3,134,114
Other chains, pounds	1,473,883	1,064,771	11,877,163	10,033,930

*July 1 to Dec. 31, 1925.
**Beginning Jan. 1, 1926.

Pig Iron Famine in Great Britain

Five Furnaces of More Than 200 in Three Leading Districts Operating—All Open-Hearth Steelworks Suspended—Tin Plate Consumers Placing Orders in United States

2-3 Caxton House, Westminster, S. W.1
European Headquarters,
IRON TRADE REVIEW,

LONDON, June 29.—(*By Cable*)—A pig iron famine is developing in Great Britain as the result of the coal strike. Only five blast furnaces, of more than 200 in Middlesbrough, Scotland and Staffordshire, active before the strike, now are operating. Two are active in Scotland, one in Staffordshire, while only two of about 120 stacks in the Middlesbrough district are producing iron. Iron foundries on the coast are increasing their foreign purchases, but high inland freight rates and other difficulties of transportation prevent rail shipments. Some of the inland foundries are considering suspending operations.

Steelworks also are feeling the paralyzing effect of the coal strike. One Middlesbrough steelworks and one Glasgow steelworks are operating, rolling plates for their own tubeworks. All open-hearth furnaces have suspended, but manufacturers of special steels in Sheffield are managing to keep going with electricity. Engineering works are using more fuel oil.

The reopening of some coal pits in Staffordshire is having a tendency to relieve the situation in that district, and one galvanized sheet mill is managing to operate four-fifths of capacity. Imports of foreign steel are increasing. The shortage of tin plate is acute, leading consumers to place orders in the American market.

The French and Belgian markets are active. Japan has placed some steel orders in Belgium. Berlin reports German mills are receiving orders for tin plate, wire rods, sheets and wire.

Strike Stops Most British Iron Production

BIRMINGHAM, Eng., June 23.—(*European Staff Service*)—Active operations are rapidly dwindling in all iron and steel districts and, as was to be expected, the general strike and the coal stoppage are responsible for a heavy falling off in output of iron and steel products during May. Figures published by the National Federation of Iron and Steel Manufacturers records that the output of pig iron in Great Britain during May was only 88,800 tons, compared with 539,100 in the previous month and 574,700 tons in May, 1925. Production of steel castings was 45,700 tons compared with 661,000 tons in April, and 651,600 tons in May, 1925. There were 23 furnaces in blast at the end of the month, compared with 147 in April. Overseas trade was, of course, affected to a remarkable degree, the total export of 9470 tons of forge and foundry iron, for example, comparing with 30,486 tons in April.

Sterling—$4.86

The main activity relates to the constructional steel department where a remarkable number of inquiries and contracts are arriving. This involves a large tonnage as these works customarily operate on a three-shift system and are able to turn out about 3000 tons of steel per week, with the aid of modern machinery. Home and foreign railways are still booking slowly and considerable activity is in prospect when rolling operations can be resumed. At Barrow the armament department of Vickers Ltd. is said to be well off for orders which will ensure much activity in this important branch of the firm's work for some years to come. English steel prices are decidedly firmer at £7 10s ($36.45) for joists, an increase of 7s 6d ($1.82)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 28

Export Prices f. o. b. Ship at Port of Dispatch—By Cable

	British Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$19.48	4 0 0*	$16.31	3 7 0	$16.31	3 7 0	$17.53	3 12 0
Basic	18.87	3 17 6	16.92	3 9 6	16.92	3 9 6	17.05	3 10 0
Basic-bessemer	19.48	4 0 0†	14.00	2 17 6	14.00	2 17 6	18.26	3 15 0
Hematite, Phosphorus 0.02-0.05	20.21	4 3 0	19.28	665*	.....	....	20.70	4 5 0
SEMIFINISHED STEEL								
Billets	$27.39	5 12 0	$21.18	4 7 0	$21.18	4 7 0	$20.70	4 5 0
Wire rods	43.83	9 0 0	25.81	5 6 0	25.81	5 6 0	27.27	5 12 0
FINISHED STEEL								
Standard rails	$35.31	7 5 0	$29.22	6 0 0	$29.22	6 0 0	$29.22	6 0 0
Merchant bars	1.48c	6 17 6	1.05c	4 15 0	1.05c	4 15 0	1.04c	4 16 0
Structural shapes	1.38c	6 7 6	1.01c	4 12 0	1.01c	4 12 0	1.03c	4 15 0
Plates, ship, bridge and tank	1.46c	6 15 0	1.10c	5 0 0	1.10c	5 0 0	1.16c	5 7 0
Sheets, black, 24 gage	2.23c	10 5 0	2.04c	9 5 0	2.04c	9 5 0	2.42c	11 0 0
Sheets, galvanized, 24 gage, corrugated	3.52c	16 5 0	3.14c	2,400*	3.99c	3,100*	3.63c	16 10 0
Bands and strips	2.17c	10 0 0	1.31c	1,000*	1.32c	6 2 6	1.43c	6 10 0
Plain wire, base	2.12c	9 15 0	1.32c	6 0 0	1.32c	6 0 0	1.51c	6 17 0
Galvanized wire, base	2.77c	12 15 0	1.76c	8 0 0	1.76c	8 0 0	1.98c	9 0 0
Wire nails, base	2.07c	9 10 0	1.71c	7 15 0	1.71c	7 15 0	1.76c	8 0 0
Tin plate, base box 108 pounds	$ 4.99	1 0 6	.....	....	.....	....	$ 6.82	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported

			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.77	3 15 0	$13.97	480(2)	$14.20	500	$19.55	85
Basic pig iron	17.77	3 15 0	13.34	460(1)	13.92	490	20.24	88
Furnace coke	5.36	1 2 0	3.10	169	4.40	155	4.95	21.50
Billets	27.39	5 12 6	17.98	620	19.60	690	27.37	119
Standard rails	1.63c	7 10 0	0.98c	750	0.93c	720	1.46c	140
Merchant bars	1.57c	7 5 0	1.09c	835	.097c	750	1.46c	140
Shapes	1.52c	7 0 0	0.97c	740	0.93c	725	1.42c	136
Plates, ship, bridge and tank	1.63c	7 10 0	1.09c	830	1.03c	800	1.60c	153
Sheets, black, 24 gage	2.28c	10 10 0	1.97c	1500	1.55c	1200	2.19c	210
Sheets, galvanized 24 gage, corrugated	3.42c	16 0 0	3.05c	2325	3.12c	2425	3.96c	380
Plain wire	2.12c	9 15 0	1.57c	1200	1.45c	1125	1.88c	180
Bands and Strips	2.28c	10 10 0	1.29c	985	1.26c	970	1.67c	160

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £1 2s 0d ($5.36) f. o. b. Ferromanganese £14 10s 0d ($70.62) f. o. b. German ferromanganese £12 0s 0d ($58.44) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French Belgian Luxemburg, and German are for basic-bessemer steel.

on prestrike quotations, and as high as £7 17s 6d ($38.27) has occasionally been named. In the Black Country area rerolling of foreign steel is still in progress and foreign bars are quoted at £4 17s 6d ($23.69) f.o.b. Antwerp or £6 ($29.16) delivered. Local nut and bolt makers are also making use of Belgian No. 3 iron at £6 ($29.16) delivered, though steel is now increasingly preferred for the manufacture of nuts and bolts. Business is still being done by British merchants in shipping continental steel direct from Antwerp to foreign customers. Quotations received this week are easier except for billets at £5 5s ($25.51) delivered in this district. Many Birmingham firms relying on regular supplies of steel have been able to satisfy their needs from local rerolling mills who have managed to operate with the aid of fuel recovered from pit mounds, slacks, and in some cases electric driving, power being supplied by local corporations. One steelworks is understood to be operating in the Glasgow area providing plates for use in its own tube works.

Pig iron supplies are rapidly approaching exhaustion in all districts. Cleveland iron has nearly all been disposed of with the exception of hematite, large stocks of which were accumulated prior to the strike. Values have naturally tended to rise, but on the whole the market has been free from any attempt at exploitation. Mixed numbers were quoted at £3 18s 6d ($19.08) both for home use and shipment overseas.

Hardly any business is being done in the Barrow area with the exception of small lots needed by foundries. Bessemer mixed numbers were quoted at £4 7s 6d ($21.26) delivered Glasgow, £4 10s ($21.87) delivered Sheffield, and £4 15s ($23.08) per ton delivered Birmingham.

All blast furnaces are now understood to have been blown out or damped down in the Birmingham area and higher prices are asked for sales made from stock. Derbyshire iron is exhausted and the last lot sold realized £3 15s ($18.23) per ton, a rise of 10s ($2.43) over prestrike quotations.

Two more blast furnaces have been blown out in Scotland. Two are still in operation, compared with twenty at the commencement of the stoppage, while in normal times 85 furnaces would be at work. Scotch No. 3 G.M.B. is quoted at £3 17s 6d ($18.83) and basic £3 13s 6d ($17.85).

Offers of foreign pig iron have been received and some imports of this material have taken place. A serious obstacle however, to the use of foreign iron in the Midland area is the heavy cost of rail transit coupled with the delay owing to the disorganization of railway services. Works situated on the coast, however, can make use of foreign iron to a small degree.

The galvanized sheet trade is still booking orders at the advanced price of £16 ($77.76), though deliveries in most cases are not promised until after the termination of the strike. Some works will not entertain orders at all, not being disposed to enter into poststrike commitments.

French Mills and Stacks Busy

PARIS, June 24.—(*European Staff Service*)—Industrialists are anxiously awaiting the report of the committee of experts appointed by Finance Minister Peret. This committee, which was selected without regard to party, includes a number of the most prominent financiers in France. It is rumored that restrictions will be placed on imports of certain products from all countries except Germany.

Blast furnaces are being operated to capacity. Prices are firm without change. The Belgian-Luxemburg-French syndicate of pig iron producers is maintaining phosphorus pig iron at 500 francs ($15) for the Belgian domestic market and £3 6s ($15.99) f.o.b. Antwerp for export tonnage. In France, No. 3 foundry still is quoted at 460 francs ($13.80) per metric ton f.o.b. furnace. Foundry hematite is offered at 620 francs ($18.60).

Semifinished steel prices are firm at old levels. The best promise of shipment obtainable on new business is second half of July. Export prices range about as follows: basic bessemer blooms, £3 19s ($19.11); billets, £4 5s ($20.60); sheet bars, £4 9s ($21.56).

Rolling mills are congested with orders. Several important interests have withdrawn from the market. Prices continue to rise gradually. Merchant bars for domestic consumption are quoted at 800 francs ($24). This is a minimum prices as small lots have been sold at as high as 870 francs ($26.10) per metric ton f.o.b. mill. Heavy shapes bring from 720 francs to 760 francs ($21.60 to $22.80). French mills continue to go as low as £4 15s ($23) f.o.b. Antwerp to obtain bar tonnage for export. Plate makers are not enjoying as lively a market as other departments. Heavy plates are dull. Prompt delivery of reasonable tonnage can be obtained at 860 francs ($25.80). Sheet

Franc—$0.03

mills are behind with deliveries and prices are being advanced.

Negotiations in view of an entente between iron and steel producing countries in Europe are being pursued. According to reports, Belgian metallurgists are about to reach an agreement. French manufacturers are holding meetings for the purpose of studying the problem. If the various countries concerned can reach some agreement regarding their individual domestic markets, it will facilitate the constitution of an international syndicate to deal with exports.

French April Production Keeps at High Gait

Paris, June 23.—(*European Staff Service*)—French production of iron and steel in April continued at a high rate although the figures did not reach the March level when the highest tonnage in history, both of pig iron and steel, was reached. However, the daily average output of pig iron in April was slightly above that of March, while the daily average output of steel was slightly smaller.

In April pig iron production was 767,825 metric tons, compared with 772,416 tons in March. This included 572,101 tons of basic bessemer 145,434 tons of foundry 26,406 tons of 145,434 tons of foundry 26,406 tons of gray forge 21,261 tons of special grades, and 2623 tons of acid bessemer. The number of furnaces in blast on April 30 was 146, one less than on March 31.

Steel output for April was 683,269 metric tons, against 725,611 tons in March. This included 671,438 tons of ingots and 11,831 tons of castings. April tonnage included 471,274 tons of basic bessemer, 198,191 tons of openhearth, 6621 tons of electric, 6183 tons of acid bessemer and 1000 tons of crucible steel.

The following table shows monthly production figures since the beginning of the year, compared with the monthly average of preceding years, in metric tons:

Mon. ave	Pig iron	Steel ingots and castings
1913	433,900	390,580
1923	452,650	425,795
1924	637,660	575,540
1925	705,985	617,920
1926		
Jan.	762,810	660,566
Feb.	706,514	630,348
March	772,416	725,611
April	767,825	683,269

French Find Profit in Modern Equipment

Paris, June 23.—(*European Staff Service*)—Stockholders of the Société Métallurgique de Senelle-Maubeuge held their annual general meeting at Longwy, May 25. In the report of the board of directors it was stated that the financial year 1925 showed a marked improvement on the preceding year, due more especially to increase of production of various plants and a reduction of production cost due to the use of modern machinery. It was explained that during the period of reconstruction the sole aim was to produce with whatever machinery was available, and it is only in the past two years that full advantage could be taken of modern appliances and methods. Important work still has to be conducted before the reconstruction of the plants can be considered final. This includes the electric driving of the blooming mill at the Senelle plant and extension of the plate and sheet mill at Laval-Dieu.

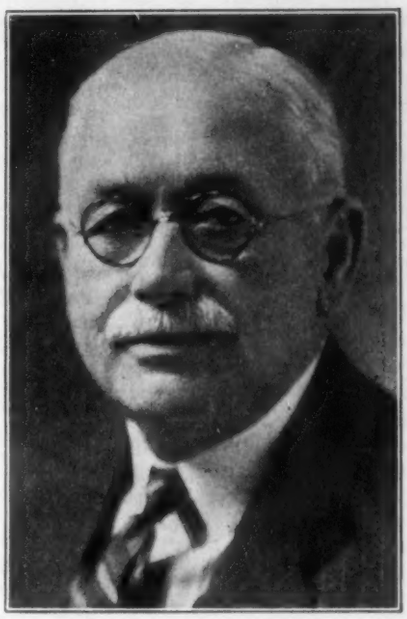
Industrial Men in the Day's News

W. G. Hurlbert Sr., for 35 Years Head of a Metalworking Company

FOR 35 years he has served as an executive, and for 24 years as president of a metalmaking company, of which he was one of the founders.

MANUFACTURER of a steel product of comparatively recent origin, his management has contributed to the ever expanding domestic consumption of iron and steel.

OF A kindly and genial disposition, he has endeared himself to his organization and to the community in which he had for a long time an active part in civic affairs.



DEVELOPMENT of a steel product from the experimental stage to a commodity common to the industrial world is the part which William Griswold Hurlbert Sr. has played in the history of the iron and steel industry of the United States. Metal lath was a little used product when the Bostwick Steel Lath Co., Niles, O., was founded, June 19, 1891. The company, many times its original size, has just celebrated its thirty-fifth birthday, and Mr. Hurlbert his executive direction of it for that period.

In addition to his activities in developing a new use for steel, as involved in his direction of the Bostwick company, Mr. Hurlbert has taken a leading part in civic affairs of his community. He was one of the original organizers of the Rotary club in Warren which he left to form the Niles Rotary club, and served as its first president. Mr. Hurlbert served two terms in the city council at Warren, where he has lived since 1900. For many years he has been a member of the American Iron and Steel institute and has attended regularly the spring and fall meetings. Masonic activities also have received his interest. He is a Knight Templar, a Shriner and thirty-second degree Mason. He was head of the Royal Arcanum in the state of Ohio and for several years was a member of its national council.

Mr. Hurlbert is of a genial and kindly disposition and has won the affection of his employes and associates. He is progressive and in modern terminology a "go-getter." He is known as an exceptionally able salesman, often being accredited with being the best in the metal lath industry. His ability to sell has in no small part been responsible for the success of the Bostwick company and the metal lath industry.

Born in Forestville, Chautauqua county, N. Y., Nov. 11, 1858, Mr. Hurlbert was associated with his father in the hotel business at Petroleum Center, Pa., at the height of the oil boom there. Death of his father made it necessary for him to terminate his schooling at an early age. He went to work for the New York Central railroad at Buffalo as a freight car checker and later as clerk. For several years he was located in Dunkirk, N. Y., in the hotel business, operating the Hurlbert House. In 1889 he joined with his brother-in-law, U. K. Loose, to establish a private bank at Harrington, Nebr. Anticipating the hard times of 1891 and the panic of 1893, Mr. Hurlbert sold out his interest and returned to Ohio, going to Youngstown where George A. Baker, another brother-in-law, was proprietor of the Tod House.

He became interested in W. W. Bostwick and joined him in forming the Bostwick Steel Lath Co. Mr. Bostwick was a promoter owning the patent rights. In 1892 he formed a company in London, Eng., under the same name and then retired from the Niles company in which he had been a director. This left full executive direction to Mr. Hurlbert. For 11 years he was secretary and treasurer, and in 1902 was elected to the presidency which he since has occupied.

The only hobbies of Mr. Hurlbert have been metal lath and his family, consisting of his wife, two sons, a daughter and two grandchildren. One son, W. G. Hurlbert Jr., is secretary-treasurer of the Bostwick company.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

CHARLES E. STONE, for several years assistant to the president of the Chain Belt Co., Milwaukee, has been elected vice president and general manager of the Interstate Drop Forge Co., that city. Mr. Stone graduated from the University of Michigan in mechanical engineering in 1910 and spent several years with the Foos Engineering Co., first as engineer and later as purchasing agent. He came to the Chain Belt Co. in 1918 to take charge of its purchases. Mr. Stone has been active in the National Association of Purchasing Agents since its organization and was vice president in 1922.

C. C. Bremer who has been comptroller for the Interstate Drop Forge for a number of years was elected secretary. C. R. Messinger is president. Other directors are W. J. Nugent, president of the Nugent Steel Castings Co., Chicago, C. F. Messinger, vice president of the Chain Belt Co., L. S. Peregoy, vice president of Sivyer Steel Castings Co., William C. Frey, E. L. Wood and J. W. Milspaugh.

* * *

E. V. Strickler has been transferred from the Cleveland to the Pittsburgh offices of the American Engineering Co.

* * *

James F. Miller, formerly president of the Interstate Foundry Co., Cleveland, has joined the Miller-Hurst Corp., Detroit.

* * *

Laird U. Park of Park & Williams, Inc., Philadelphia, returned June 25 on the MAURETANIA, from a trip to Europe.

* * *

H. A. Herisse has become an active partner in Peterson Bros. Inc., 33 Murray street, New York, manufacturers' direct representative.

* * *

J. C. Keplinger for the past four years in the production departments of the Timken Roller Bearing Co., Canton, O., recently was made advertising manager for that company.

* * *

B. F. McMahon, sheet and tin plate sales agent for the Bethlehem Steel Co., Bethlehem, Pa., has returned to Pennsylvania from Cleveland where he underwent an operation.

* * *

Harry J. West has been appointed vice president at Boston of the Atlas Steel Corp., that city, agents for special and tool steels.

Harry H. Hardwick has been appointed vice president at Chicago.

* * *

John A. Penton, chairman of the Penton Publishing Co., Cleveland, publisher of IRON TRADE REVIEW, *Daily Metal Trade* and other business publications, returned June 25 on the MAURETANIA, from a four months' visit to Europe.

* * *

Robert H. McCracken has been appointed Philadelphia district sales manager for the Central Iron & Steel Co., Harrisburg, Pa., succeeding Harold S. Moore, who died some few weeks ago. Mr. McCracken had been Mr. Moore's assistant for several years.

* * *

George M. Bernstein, for many years with Louis E. Emerman & Co., Chicago, machine tool dealers, has resigned and will conduct a business under his own name, as George M. Bernstein & Co., 549 West Washington boulevard, Chicago, dealing in new and used machine tools, plate working and hydraulic equipment and machinists' supplies.

* * *

A. B. Root, mechanical engineer, Hunt-Spiller Mfg. Corp., South Boston, Mass., and president of the American Foundrymen's association, has been appointed assistant to the vice president of the Hunt-Spiller company. He will be succeeded by Joseph Goostray as mechanical engineer. Mr. Goostray has been assistant mechanical engineer for four years. During the war he was connected with the submarine base at New London, Conn. The Hunt Spiller company makes gun iron castings and specializes on railroad work.

* * *

D. Lawrence Carlson has been elected president of the Lundell-Eckberg Mfg. Co., Jamestown, N. Y., manufacturer of steel casements. He succeeds Gustaf E. Eckberg who resigned recently to return to Sweden for an indefinite stay.

Elmer W. Haglund has been elected a director of the company to succeed Mr. Eckberg. In addition to Mr. Carlson as president and treasurer, officers are Victor S. Lundell, vice president and superintendent and Mr. Haglund, secretary and assistant treasurer.

* * *

Justus H. Schwacke, formerly president and a director of William Sellers & Co. Inc., Philadelphia, has resigned and retired to private life, effective May 31. He had been with the Sellers company since July 15, 1862. He was prominent in National Metal Trades association activities, in the National Founders association and the Metal Manufacturers association of Philadelphia.

Alexander Sellers was elected president June 1 to succeed Mr. Schwacke. He had been with the company since 1896 and had been a director since 1902 and vice president since 1905.

* * *

Carl Stahlecker, manager of the steel department of Brown-Wales Co., Boston, and for 27 years associated with that company, has resigned to become vice president and general manager of the newly formed Stahlecker Steel Corp., which will have its office and warehouse at 19 Congress street, Boston. The new company will conduct a general warehouse business in merchant steel bars and structural shapes for immediate delivery. The officers of the company are B. Atwood Robinson, president, Mr. Stahlecker, vice president and general manager, and Wallace Blanchard, treasurer and clerk.

* * *

George M. Dyke was elected assistant secretary of the Chain Belt Co., Milwaukee, manufacturer of concrete mixers, elevators, conveyors and chain. Mr. Dyke is to fill the vacancy caused by C. E. Stone resigning to become vice president and general manager of the Interstate Drop Forge Co.

F. M. Lowum was elected assistant treasurer. Other offices of the Chain Belt Co., are C. R. Messinger, president, C. F. Messinger and J. C.

(*Continued on Page* 54)

Market Analysis Needed for Tools

(*Concluded from Page* 14)

business showed an appreciable pickup in June and a fairly satisfactory month has just come to a close. In many cases, purchases have been above the average for the year and far better than during the corresponding period of last year.

Business placed has consisted of but one or two machines at a time, orders involving more than two units being notable exceptions. One of the most encouraging factors in the situation is that is that all lines of industry are participating in the buying, this including railroads, automotive and general manufacturing. For some time the automobile industry has been out of the market except for such equipment as has been necessary for replacement use or rounding out production units, practically none of it has figured in expansion programs. At the present moment, the machine tool industry is watching the automobile situation with interest for the introduction of several new light cars modeled after current European practice and advanced American design to afford unusually economical operation is expected to create a need for many tools in preparation for high production.

During June, the introduction of new tools or new models was relatively light, due to some extent to the fact that a number of units were announced last month in preparation for the machine tool exhibition held in conjunction with the convention of the American Railway association at Atlantic City early in June. One of the new machines exhibited at that time was a 90-inch locomotive wheel quartering lathe built by the Niles-Bement-Pond Co. and described as No. 115 in the accompanying Digest. In No. 102 is described improvements made in the line of verical turret lathes manufactured by the Bullard Machine Tool Co. Baush Machine Tool Co. has brought out a multiple spindle drill which is described in No. 106. A die sinker, or vertical milling machine, introduced by Reed-Prentice Co. is described and illustrated in No. 107.

A new type of triple screw testing machine designed by the Riehle Bros. Testing Machine Co. is described in No. 108. It is built in sizes ranging up to 1,000,000 pounds. Another interesting piece of apparatus is the hydraulic press described in No. 109. Its purpose is to force bearing metals into shape without raising the metal to a casting temperature high enough to change their characteristics. The press was built by the Oilgear Co. A floor grinding machine designed to round out the line of equipment made by the Cincinnati Electrical Tool Co. is described in No. 104.

Car Plant Purchased

Youngstown, O., June 29.—Sale of control of the Standard Tank Car Co., operating a plant at Masury, O., to the Standard Steel Car Co., with a plant at Butler, Pa., was reported recently, effective July 1.

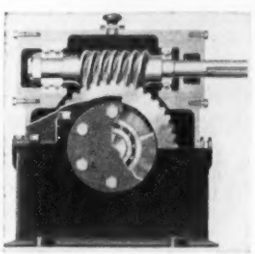
The Standard Tank Car Co. is a $10,000,000 corporation and one of the important industrial properties in the Youngstown district. About a year ago it was reorganized and control passed to New York interests, headed by C. M. P. Murphy and associates. Control was previously vested in John Stevenson of Sharon, Pa., who still retains a substantial interest in the company.

Francis B. Marsh was elected president of the Providence Engineering society at the annual meeting and smoker of the organization held last week at Providence, R. I.

Speed Reducer Is Fully Enclosed

No. 110

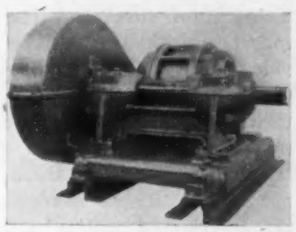
William Ganschow Co., 24 North Morgan street, Chicago, announces a new worm gear speed gear reducer fully enclosed in a cast iron housing. All moving parts run in an oil bath, the base of the housing forming an oil reservoir. The housings are symmetrical and either worm or gear shaft extensions may be reversed at any time. Antifriction thrust bearings are used throughout but ball or roller bearings may be fitted.



Puts Back Gear Device on Motor

No. 112

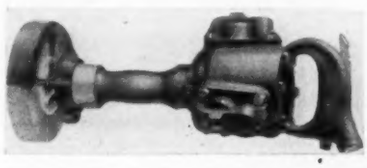
General Electric Co., Schenectady, N. Y., has designed for attachment to one of its lines of induction motors a back-geared attachment to operate under the most unfavorable conditions. The base to which the motor and back shaft pedestals are bolted and doweled is a single casting. A special unit-type pedestal is used assuring maximum rigidity and permanent alignment of shafts, meshing of gear and pinion.



Electric Drill Runs at High Speed

No. 111

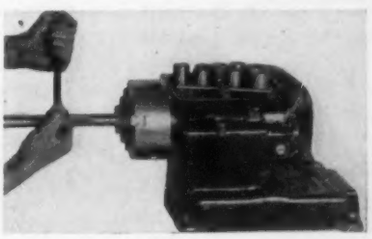
Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, has designed a ¼-inch electric drill featuring high speed, maximum power, moderate weight and great endurance for industrial work. It has a pistol grip with thumb button switch and operates on either alternating or direct current. Full load speed is 1280 revolutions per minute. Oversized ball bearings are used. Commutator and brushes are accessible.



Reamer Driven by Bench Machine

No. 113

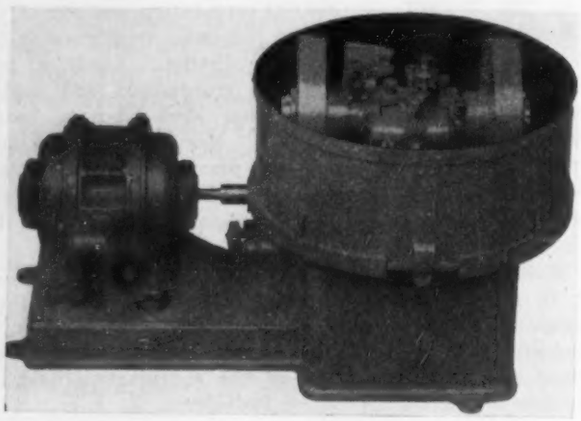
Van Norman Machine Tool Co., Springfield, Mass., is introducing a compact, bench-type, motor-driven reaming machine adapted for general machine shop use where a considerable amount of hand reaming is necessary. With this tool the reamer is driven and the work held in the hands. The chuck takes shanks ¼ to 1½-inch diameter. Speed is 30 revolutions per minute.



Mixes Sand for Laboratory Work

No. 114

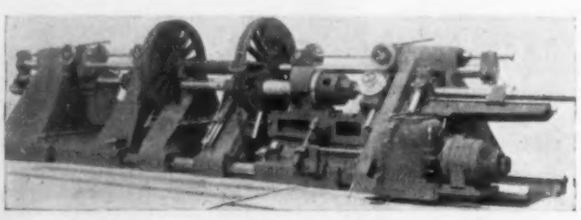
National Engineering Co., 549 Washington boulevard, Chicago, is now marketing a small size intensive sand mixer for laboratory use. This mixer is built along the same lines as the larger machine of the same type now used for the preparation of core, facing and backing sands in foundries. The smaller unit was built to assist founders interested in sand preparation, reclamation and control; the results obtained with it being applicable to the larger machines. The mixer is complete with the driving motor and weighs 400 pounds. It will mix a batch of from 8 to 15 pounds of sand and is so designed that it can be taken apart and cleaned in a few minutes. The mullers have a diameter of 9 inches with 1½-inch face.



Lathe Quarters Locomotive Wheels

No. 115

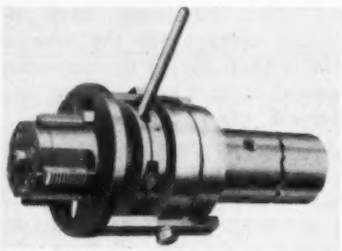
Niles-Bement-Pond Co., 111 Broadway, New York, introduced at the recent railway exhibition in Atlantic City a new 90-inch wheel quartering machine. This tool is regularly arranged for boring simultaneously crankpin holes in locomotive driving wheels and by use of a crankpin turning attachment, crankpins mounted in wheel sets also can be turned. The design provides for wheel sets having right-hand lead only, which permits the machine to be built with great rigidity. The bed is a massive casting 28 feet long and 2 feet deep. Both right and left-hand headstocks are provided, these being adjustable laterally by power. These headstocks are designed to carry the quartering saddle within the main casting. A saddle carrying a spindle is mounted in each headstock, having an adjustment toward and from the dead spindle centers from 11 to 20 inches, this being equivalent to 22 to 40 inches piston stroke. The boring bar is 4½ inches diameter and has both hand and power traverse for lateral movement. Each boring spindle is independently driven by its own motor through a large worm and worm wheel running in oil.



Collapsible Tap Design Improved

No. 116

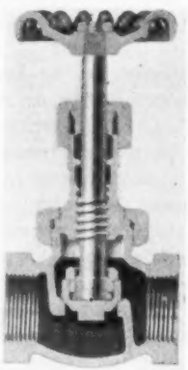
National Acme Co., Cleveland, announces a new collapsing tap which replaces its older types of outside trip type taps. A fundamental change in the new tool is the use of a recessed, cup-like front plate which is closely fitted over the body of the tap. Adjustments for size are made easily with a screw driver. It is manufactured in 15 sizes.



Valve Employs Two-Piece Bonnet

No. 117

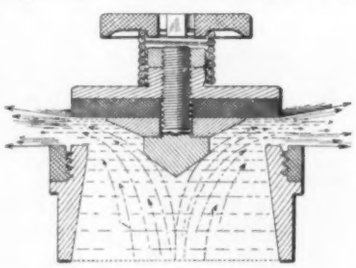
Ohio Injector Co., Wadsworth, O., is introducing a new line of bonnet-type valves incorporating the feature of the two-piece bonnet. The joint between the bonnet and body is such that the thread is outside of the seat and thus protected from the action of the fluid passing through the valve. The construction also facilitates grinding in the valve without removing it from the line. Full pipe area is provided.



Valve Improves Pump Efficiency

No. 118

Williams Gage Co., 1620 Pennsylvania avenue, Pittsburgh, has placed on the market a new pump valve designed to give maximum efficiency. It is made unusually strong and sturdy but simple, having only four parts. To assure sensitivity it is as light as possible, making its action instantaneous. Slippage and leakage are minimized.



Index of New Equipment Described in This Issue

No.	Equipment	Manufacturer	Page
102.	Vertical turret lathe	Bullard Machine Tool Co.	12
103.	Crane truck	Baker-Raulang Co.	12
104.	Floor grinder	Cincinnati Electrical Tool Co.	12
105.	Gasoline locomotive	Vulcan Iron Works	12
106.	Multiple spindle drill	Baush Machine Tool Co.	13
107.	Die sinker	Reed-Prentice Co.	13
108.	Testing machine	Riehle Bros. Testing Machine Co.	14
109.	Bearing press	Oilgear Co.	14
110.	Speed reducer	Ganschow, William, Co.	51
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115.	Quartering lathe	Niles-Bement-Pond Co.	52
116.	Collapsible tap	National Acme Co.	52
117.	Hand valve	Ohio Injecor Co.	52
118.	Pump valve	Williams Gage Co.	52

Machine Tools Introduced in 1926 (By Manufacturers)

	Issue		Issue
Baker-Raulang Co.	7/1	Ohio Injector Co.	7/1
Baush Machine Tool Co.	7/1	Oilgear Co.	7/1
Bullard Machine Tool Co.	7/1	Reed-Prentice Co.	7/1
Chicago Pneumatic Tool Co.	7/1	Riehle Bros. Testing Machine Co.	7/1
Cincinnati Electrical Tool Co.	7/1	Van Norman Machine Tool Co.	7/1
Ganschow, William, Co.	7/1	Vulcan Iron Works	7/1
General Electric Co.	7/1	Williams Gage Co.	7/1
National Acme Co.	7/1		
National Engineering Co.	7/1		
Niles-Bement-Pond Co.	7/1		

Machine Tools Introduced in 1926 (By Products)

No.		Issue
	Drilling Machines	
106.	Multiple spindle drill	7/1
111.	Portable electric drill	7/1
	Grinding Machines	
104.	Floor grinder	7/1
	Lathes and Automatics	
115.	Quartering lathe	7/1
102.	Vertical turret lathe	7/1
	Material Handling Equipment	
103.	Crane truck	7/1
105.	Gasoline locomotive	7/1
	Milling Machines	
107.	Die sinker	7/1
	Punches, Presses, etc.	
109.	Bearing casting press	7/1
	Small Tools	
116.	Collapsible tap	7/1
113.	Reamer drive	7/1
	Miscellaneous	
117.	Hand valve	7/1
112.	Motor back gear	7/1
118.	Pump valve	7/1
114.	Sand mixer	7/1
110.	Speed reducer	7/1
108.	Testing machine	7/1

To conform with indexing of IRON TRADE REVIEW *each half year, the machine tool index for the first half of* 1926 *was closed in June and beginning with this issue a new index will be carried forward until the close of the year. The consecutive system of mumbering, however, will be carried out throughout the entire year in order that a recapitulation may be published next January. The machine tool index for the first half of* 1926 *will be found on Page* 1479 *of the June* 3 *issue.*

Organize International Standards Body

The basis for a general international organization for industrial standardization was laid at the third international conference on standardization in New York recently with unanimous agreement upon the draft of a constitution for the new body. Eighteen countries were represented in the conference. The proposed constitution of the organization, which is to be called the International Standards association, states the objects of the association as follows:

"To lay the groundwork for international agreement upon standards by providing simple systematic means of interchanging information on the standardization work and activities in the different countries.

"To develop general guiding principles for the assistance of the national standardizing bodies.

"To promote uniformity among the standards of the various national bodies.

"It is the intention of the International Standards association that its work shall include the approval of international standards and the administrative machinery herein set up is so designed that it may be readily extended or modified to include the approval of such international standards when sufficient experience has been acquired."

The chief executive body is to be the "plenary assembly," composed of delegates of all the national bodies with the final authority resting with the latter. Provision also is made for an "administrative council," with control of finances and administrative matters. The conference recommended the seat of the new organization be in London, final decision to be made by the first plenary assembly. The financial support is to be divided into three parts: 25 per cent of the total budget as a fixed sum to be divided equally among the national bodies; 50 per cent based on the total amount of foreign trade of each country; and 25 per cent based on the population of each country.

Will Broaden Slag Use

Among gifts aggregating $100,000 accepted by the board of regents of the University of Wisconsin at Madison is one of $30,000 from the Engineering Foundation for research in the use of blast furnace slag. The acceptance of this gift was somewhat of a surprise, for the regents not long ago placed a ban on donations from incorporated endowment funds. In this instance, however, it was explained that the regents construed the rule as not applying.

Reports on Simplified Reinforcing Steel

The division of simplified practice, department of commerce, is distributing the report of the general conference on steel spiral rods for concrete reinforcement which was held Jan. 26. The report contains the proposed specifications, a history of the revision program, the personnel of the general conference and a sheet for acceptance of the recommendations. It is intended that the simplified list of sizes become effective as applying to production on Dec. 15, 1926 and that every effort be made to clear current orders and existing stocks of the eliminated sizes before March 1, 1927.

Apprentice Training Is Urged by Chamber

Washington, June 29.—A warning that a shortage of skilled workmen will continue to exist unless a more concerted effort is made by employers to train apprentices is sounded in a pamphlet on "Apprenticeship" issued by the department of manufacture, Chamber of Commerce of the United States. The pamphlet is based on a nation-wide investigation.

"Restricted immigration," the pamphlet says, "has reduced the former supply of trained manpower. Also, the tendency has been for boys to drift toward clerical and office jobs.

"There is ample evidence that little has been done to interest the sons of employes. The business which employs the father may and most frequently does offer a worthwhile opportunity for the sons. Notwithstanding the great growth of labor-saving and automatic machinery there is yet ample room for brains and skill in industry. American business men can do nothing more important than the educating and training of the young men whose greatest prospects of success lie along industrial lines."

In many lines of industry, such as building, printing, metal trades, plumbing and heating, foundry, tile, granite, brick masons, wallpaper, etc outstanding and successful activities in apprenticeship are at the present time being conducted.

Men of Industry

(*Concluded from Page* 50)

Merwin, vice presidents, Brint Welser, secretary, C. L. Pflifer, treasurer and William C. Frey, E. L. Wood and H. O. Seymour and Donald Frazar, directors.

* * *

E. H. Petsche recently appointed general manager of the Arex Co., Chicago, ventilator manufacturer, formerly was works manager. Mr. Cubit succeeds him as works manager.

* * *

Milton M. Jones, treasurer of the Belle City Mfg. Co., Racine, Wis., manufacturer of farm equipment, has resigned to take an extended vacation. He joined the company in 1888 as an office boy and 12 years ago was elected treasurer.

* * *

Edwin R. Harding, former first vice president and western manager of the Holtzer-Cabot Electric Co., Boston, electrical equipment manufacturer has been elected president to succeed Charles W. Holtzer, who has retired recently. Last year the company celebrated its fiftieth anniversary.

* * *

W. J. Beck, director of research, American Rolling Mill Co., Middletown, O., has sailed for a three months' trip through Europe. He will visit industrial centers of Great Britain and the Continent and will devote most of his time to metallurgical problems.

* * *

W. Vernon Phillips of Phillips & Sons Co., Philadelphia, has returned from a visit to France, Germany, Belgium, Luxemburg and England.

* * *

Robert W. Gillispie has resigned from the sales department of the Bethlehem Steel Co., Bethlehem, Pa., where he was assistant manager of structural and plate sales, effective July 1 to become vice president of the Jeffrey Mfg. Co., Columbus, O., manufacturer of mine equipment, etc.

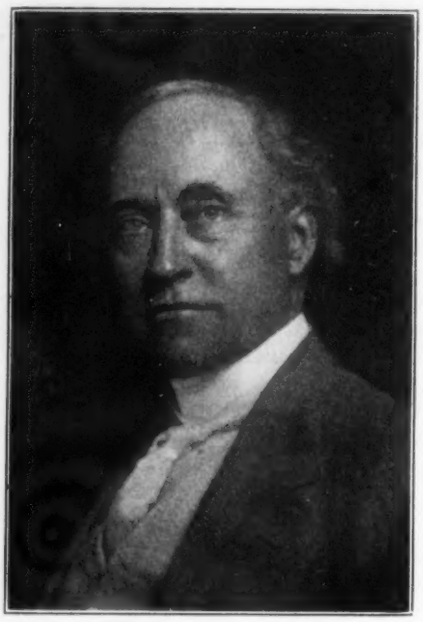
* * *

Otto Muehler, purchasing agent for the Budd Wheel Co., Philadelphia, will leave July 10 for Oxford, England where he will have charge of a new Budd plant to manufacture automobile bodies in that country under the name of the Pressed Steel Co. of Great Britain, Ltd.

C. W. Messinger, formerly of the Stanley Works, has been appointed purchasing agent of the Edward G. Budd Mfg. Co., Philadelphia, affiliated with the Budd Wheel Co.

Obituaries

GEORGE A. ST. CLAIR, pioneer iron ore prospector in the Lake Superior district, died in Duluth, June 19, aged 77 years. He had not taken an active interest in iron ore mining for some years, but was interested financially in properties in Minnesota and Michigan, and also was a member of the board of the City National bank, Duluth. He was 18 years old when he started weighing iron ore at the Washington mine in Michigan, was in charge of the mine at the age of 21, and subsequently had charge of the Winthrop mine, near Ishpeming. He went to the Mesabi range in 1892 and helped to develop such mines as the Vega, Sparta, Adams, Bangor, Malta and Spring. He explored the range extensively. He is said to have been the first to use nitroglycerin in the mines of northern Michigan, and also is reputed to have introduced the caving system in those mines.



GEORGE A. ST. CLAIR

* * *

Thomas F. Farrell of East Orange, N. J., vice president of the Pocahontas Fuel Co., parent company of the Pulaski Iron Co., was killed in the Pennsylvania railroad wreck at Blairsville, Pa., June 16. He was 62 years old.

* * *

Christopher Wallace Pank, vice president of the MacWhyte Co., Kenosha, Wis., manufacturer of wire rope and cable, died of cerebral hemorrhage at his home on June 21 at the age of 58 years. He for many years was associated with Fairbanks, Morse & Co., Chicago, becoming vice president in charge of sales, prior to joining the MacWhyte Co. several years ago.

* * *

George A. Bauer, vice president of W. E. Shipley Machinery Co., Philadelphia, died June 22. He was born in 1871 at Hamburg, N. Y. His first connection with the machine tool industry was with E. A. Kinsey Co., Cincinnati. Several years later he joined the Harris Automatic Press Co., Cleveland, and from that organization, 25 years ago, came to the W. E. Shipley Machinery Co. In 1908 he was elected to the vice presidency which he held at his death. Mr. Bauer was a member of the Old York Road Country Club, the Engineers club and the American Society of Mechanical Engineers.

* * *

Charles Ezra Scribner, prominent electrical engineer and inventor, died suddenly June 25 at his summer home near Burlington, Vt., aged 68. He was born in Mt. Vernon, O., Feb. 16, 1858 and was educated in the high school at Toledo, O. He joined the Western Electric Mfg. Co., Chicago, in 1876, the company becoming the Western Electric Co. in 1882. From 1908 to 1916 he was associated with the New York office as chief engineer in charge of development and experimental work. Mr. Scribner had taken out between 400 and 500 United States patents being the third largest patentee in the electrical field in this country. He had filed between 600 and 700 patent applications. His principal inventions related to telephone switchboards. He was awarded the gold medal at the Paris exposition in 1900. Mr. Scribner was a fellow of the American Institute of Electrical Engineers, which he served as manager in 1912-3 and vice president from 1913-5. He was a member of the board of the Engineering Foundation, member of the Telephone Pioneers, trustee of the United States Engineering Society and member of many social organizations and clubs.

Albany Steel & Brass Corp., care S. Mitchell, 1713 Burnham building, Chicago, has increased its capital from 100 to 300 shares no par value.

Machinery

June Business Continues Through Month at High Rate—Indications of Usual Summer Slump Absent—Railroad Buying Good

PURCHASES of machine tools throughout June have continued at a high level and the sales volume is considered satisfactory by most interests. Usually at this time of year a decided summer decline is under way but so far this tendency has been negligible. Business placed is coming from all lines of industry which adds security to the situation. For the most part, orders are confined to one and two tools, larger sales being exceptional. Railroad buying is good in both the New York and Chicago districts. Chicago, Burlington & Quincy has issued a list for 12 miscellaneous tools. Atlantic Coast Line is closing on its recent large list. Textile Machinery Co. and Baldwin Locomotive Works appear as likely buyers of equipment.

New York, June 29.—Railroad buying again dominates the machine tool market. While there are few outstanding lists closed, orders have been fairly numerous. Industrial buying is spotty, with Otis Elevator Co., Yonkers, N. Y., and General Electric Co., Schenectady, N. Y., among the more active buyers. Purchases by the Otis company appear to be for all its various plants. A likely buyer is Textile Machinery Co., Reading, Pa., which recently has placed steel for a plant addition. Baldwin Locomotive Works, Philadelphia, also has closed on steel for an addition to its Eddystone plant. Atlantic Coast Line, previously noted as in the market for a large list of tools, is now closing. Other railroads active include Union Pacific, which has closed on several machines including a cutter and reamer grinder; a stock adjusting machine; a micro internal grinder; one 20-inch, one 24-inch and one 30-inch geared-head lathe and two guide bar grinders, all going to Manning, Maxwell & Moore, Inc. This builder has also closed on a 200 to 300-ton mounting and demounting wheel press for Nashville, Chattanooga & St. Louis, a 90-inch driving wheel lathe for Southern Pacific, 100-ton hydraulic bushing press for New York Central and a 24-inch geared lathe, 4-inch pipe machine and a hydraulic flanging press for New York Central; also a 48-inch car wheel borer for Maine Central. A railroad in the Chicago district has closed on an axle lathe and two 48-inch car wheel borers; another middle western railroad on a 48-inch by 20-foot planer; and Pullman Car & Mfg. Co. on an axle lathe, all going to Niles-Bement-Pond Co. A railroad with shops in St. Louis has closed on a vertical shaper to Pratt & Whitney Mfg. Co. This builder has also booked two automatic worm grinders for a Detroit motor car manufacturer and two automatic millers for another Detroit company.

Boston, June 29.—Sales of machine tools in New England are relatively quiet. Tool manufacturers, however, continue to report favorably on incoming orders, and the eastern market in general shows signs of improvement. Boston school board is buying heavily for the East Boston high school. Bids were opened June 24 covering 24 engine lathes, 1 shaper, 2 drills, and other equipment. Another list of tools for the same school including 10 or 12 molding machines, lathes and half a dozen grinders will be opened July 2. Prices at a recent auction at Natick, Mass., were spotty. A No. 4 milling machine seven years old brought $3000. The new price lists it about $4000. A wrench manufacurer bought a planer and an electrical manufacturer bought two shapers. Prices are firm.

Pittsburgh, June 29.—Activity in machine tools continues confined largely to single tools or two or three machines at a time by manufacturers in different lines of activity. Larger purchases, however, probably will develop after July 4, particularly against National Tube Co.'s list for McKeesport, Pa., and against the large list of Westinghouse Electric & Mfg. Co. for East Pittsburgh. Difference of opinion on the school board is understood to be responsible for the delay in purchasing tools on the list for the Johnstown, Pa., high school. Westinghouse company this week added to its large list several items, including four inclinable presses, four speed lathes, arbor press, drill press, 48-inch squaring shear and a hand shear. About two dozen crane propositions are outstanding in this territory, only a few of which give promise of early action. Carnegie Steel Co. asked for prices on a 175-ton ladle crane, bought its ore bridge, and will shortly buy several cranes of small capacity.

Cleveland, June 29.—Machinery interests here report sales have been received in pretty steady volume throughout the month and June will shape up far better than May and close to the record of June a year ago. Business placed, so far as individual orders are concerned, is of small consequence, but the volume is good. Industrial buying is general. Manufacturers here are running at a good rate, although somewhat uncertain as to operations which can be maintained during the next two months. The used tool market is good with scattered inquiry.

Chicago, June 29.—Machine tool activities in this market show little change, continuing at a substantial rate. One dealer states that for the past five months, average business done has been remarkably constant, and so far no summer slump is in sight. Plant operations are maintained at a good rate. Most buying in the past week or two has been by railroads, industrial orders being small. Illinois Central continues a large buying factor, and both Santa Fe and Chicago & North Western railroads are expected soon to order against recent lists. Two short railroad lists have appeared, Chicago & North Western asking bids on a motor-driven turret lathe and a 52-inch single-head boring mill. The list of Chicago, Burlington & Quincy specifies the following: 36-inch crank shaper; two 36 x 36 x 10-foot bed planers; 42-inch high-duty boring mill; 16-inch geared-head engine lathe; 3-inch high-duty drill; 5-inch x 7-foot portable boring bar; 3½-inch x 6-foot portable boring bar; 36-inch heavy-duty engine lathe; 24-inch x 11½-inch tool grinder; 36-inch vertical punch of 1 x ¾-inch capacity, 36-inch vertical shear of ¾-inch capacity and serpentine shear of 2-inch plate capacity. Department of public works, Chicago, has taken bids on an 18-inch x 10-foot quick-change engine lathe.

CRANE ORDERS PLACED

Four electric overhead cranes, three for Anglo-Chilean Nitrates Corp., placed by American Smelting & Refining Co., New York, with unnamed builder; a fourth crane of 10-ton capacity placed direct for the American Smelting Co.'s account.

Three overhead cranes for Tannin Corp., Greenpoint district, Brooklyn, N. Y., placed, order reported going to Harnischfeger Corp.; specifications call for two 10-ton electric cranes with 5-ton auxiliary and one 5-ton floor controlled crane.

Three 20-ton overhead cranes for Colorado Fuel & Iron Co., Denver, for installation at Pueblo, Colo., works; to Alliance Machine Co.

Among single awards were: 10-ton overhead crane for Bethlehem Steel Co., Lackawanna, N. Y., to Alliance Machine Co.; 30-ton locomotive crane for Mekoosa Edwards Paper Co., Milwaukee, to American Hoist & Derrick Co.; 5-ton handpower crane for stone-yard in Brooklyn, to New Jersey Foundry & Machine Co.; 15-ton crane for Forged Steel Wheel plant of Columbia Steel Co., Butler, Pa., understood to have been awarded Shaw Crane works; 12½-ton ore bridge for Carnegie Steel Co., Carrie furnaces, Pittsburgh, to Mead-Morrison Mfg. Co.

CRANE ORDERS PENDING

Several cranes for Carnegie Steel Co., including one 175-ton crane for Duquesne and several small 1, 2 or 3-ton cranes for Homestead; bids being taken.

Three electric overhead cranes for General Electric Co., 10-ton for Schenectady works, and 5 and 10-ton for Buffalo works; inquiry issued. These are in addition to six cranes previously noted as pending for West Philadelphia.

Two 5-ton electric cranes for M. O'Neil Supply Co., Brooklyn, for installation in new plant to be erected in Borough of Queens, New York; bids asked.

Five cranes, including 30-ton, 25-ton, 15-ton, 10-ton and 7½-ton, for three manufacturers in Pittsburgh district.

Among single inquiries are: 5-ton crane for Superior Steel Corp., Carnegie, Pa., bids being taken; locomotive crane for large coal company, Pittsburgh, bids being taken; 15-ton pillar crane for New York Central railroad, bids asked; 15-ton handpower crane for Robert R. Livingston, engineer, for shipment to Kingstree, S. C., pending.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

O'NEIL SUPPLY Co. has started work on the erection of a pipe assembly shop and storage shed at Flushing and Onerdonk avenues, Queens, New York City. According to plans by the Ballinger Co., Philadelphia and New York City, the assembly shop will be of reinforced concrete, flat slab construction, two stories high, 75 x 175 feet. The pipe storage shed wil be 100 x 283 feet, one story, with steel roof trusses and gypsum construction. Both buildings will have walls of brick. Two 5-ton electric traveling cranes will be installed in the storage shed for unloading pipe and carrying it to pipe storage racks. A fuel oil burning system with storage tank, will be provided in connection with the heating system. A two-track railroad siding, connecting with the Long Island railroad, will enter the shed at the rear, where a large motor-operated rolling steel shutter will be provided for enclosing the building and permitting the cars to be unloaded under shelter. Structural steel for this project was recently let to the American Bridge Co.

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BUCKEYE DRYER CO., 80 East Jackson boulevard, Chicago, has recently brought out a foundry molding sand and core sand dryer, oil fired, which it is putting on the market for conditioning sand in foundries.

* * *

J. I. CASE THRESHING MACHINE CO., Racine, Wis., is shipping 35 to 40 carloads of farm machinery daily, filling a rush of orders from the grain belt. A combined reaper and thresher is being built for Kansas, Oklahoma and the Texas panhandle.

* * *

NORTHERN BLOWER CO., West Sixty-fifth street and Barberton avenue, Cleveland, is adding a floor to its main building which will allow enlargement of its machine shop and screen-making department. The increase is expected to add 30 per cent to its capacity for blowers.

* * *

THE Wiley-Bickford-Sweet Co. plant on Pliny street, Hartford, Conn., has been sold to F. W. Wolcott Mfg. Co., Hartford, electrical specialty manufacturers. The purchasing company has several department plants which will be concentrated at the Pliny street location in the 3-story factory building with 42,000 square feet of floor space.

* * *

A MERGER of three large manufacturers of pins has just been completed at Derby, Conn., involving the Star Pin Co., Derby, Conn., the National Pin Co., Detroit ,and the New England Pin Co., Winsted, Conn. The head offices will be at the Derby plant. The Star Pin Co. is capitalized at $500,000, the National Pin Co. at $150,000, and the New England Pin Co. at $200,000.

* * *

THE CHAIN BELT CO., Milwaukee, is making delivery of two carloads of equipment for copper mining interests in Chile. The order amounts to about $20,000 and consists largely of traveling water screens. The Chain Belt Co. also is shipping two large concrete mixers to the Panama Canal commission for paving construction in the Canal Zone. A year ago the government bought two of these units and the present delivery is on a repeat order.

* * *

NATIONAL FEDERATION OF IRON AND STEEL MANUFACTURERS, London, Eng., has elected H. C. Bond president and J. J. Burton vice president. Mr. Bond is deputy chairman and managing director of Richard Thomas & Co. Ltd., tin plate manufacturers. Mr. Burton is associated with Pease & Partners Ltd., is chairman of the central council of wages associations and president of the Middlesbrough chamber of commerce.

NewEnglandEmployment Declines Slightly

Boston, June 29.—Employment conditions in Massachusetts were somewhat less favorable during May than during April according to the department of labor and industries. For the 983 manufacturing establishments reporting the number of employes decreased by 2.5 per cent. The aggregate payroll decreased by 2.8 per cent and the average weekly earnings dropped from $24.31 to $24.25. The largest decrease came in the manufacture of automobiles, including bodies and parts. The number employed fell off about 14 per cent. In car shops for steam and electric roads employment in May showed an increase over April. Cutlery and tools held about stationary. Electrical machinery fell off about 5 per cent. Foundry products showed a slight improvement as did also machine shop products. No change was reported in machine tools for May.

Tax on Minnesota Iron Ore Royalties Upheld

Washington, June 29.—The United States Supreme Court has handed down an opinion in connection with the Minnesota tax incomes received from ore royalties. It sustained the decision of the federal court for the district of Minnesota, which upheld the validity of the law.

The law was attacked by seven corporations and individuals. They were the Lake Superior Consolidation Iron Mines, George L. Burrows Jr., Royal Mineral association, William E. Boeing, Robert E. Whiteside, Merrimac Mining Co., and Helen P. Bardwell. The defendants were Samuel Lord, J. G. Armson and Odin Halden, constituting the Minnesota tax commission. The Minnesota law imposes a tax of 6 per cent on "all royalty received during the calendar year for permission to explore, mine, take out and remove ore from land in this state." The statute also provides for a system of reports, and establishes the tax as a lien, from the time it is payable, on the property of the person or corporation to which the royalty is payable.

The plaintiffs sought an injunction to restrain the enforcement of the tax on the ground that it was a violation of the fourteenth amendment of the federal constitution, and Section 1 of Article 9 of the Minnesota constitution. The federal court in Minnesota on Jan. 15, 1925, dismissed the bill, whereupon an appeal was taken.

All officers of the Newark Foundrymen's association were re-elected at a recent meeting in Newark, N. J. J. L. Carter, Barlow Foundry, Inc., Newark, is president; and W. H. Mantz, Atlas Foundry Co., Irvington, N. J., secretary.

News of Societies

ONE of the few summer meetings of business groups will be that of the Research congress which will convene at Conneaut Lake Park, Pa., Aug. 2-4. This meeting is sponsored by business, professional and farm representatives in the Cleveland, Pittsburgh and Buffalo districts. One of the principal addresses will be made by George DeCamp, chairman of the Federal Reserve bank of Cleveland. During the sessions a program for research work and study for 1926 and 1927 will be worked out.

* * *

Plan Meeting in Northwest

Providing 100 members signify their intentions of participating, the American Electrochemical society will schedule a meeting and excursion in the Northwest in the fall of 1927. Points to be visited on the trip would be Minneapolis, Butte, Anaconda, Wallace, Kellogg, Spokane, Seattle, Vancouver, Great Falls, Omaha and Keokuk. The trip would start Sept. 11 and end Sept. 27.

* * *

Planning 1926 Power Show

Announcement is made that the fifth National Exposition of Power and Mechanical Engineering will be held at Grand Central Palace, New York, Dec. 6-11. Three entire floors and a portion of the fourth have been sold to exhibitors, who include 332 manufacturers of all types of mechanical and power plant equipment. An innovation in this exposition will be the addition of several exhibits essentially educational in character, their purpose being to point out advances in mechanical design and construction.

* * *

Management Conference in Cleveland

Announcement has just been made that the autumn conference of the American Management association will be held in Cleveland, Oct. 11-13. On the first day have been arranged conferences for office executives on office management problems and for sales executives on "Trend in Methods of Distribution." The other two days will be devoted to problems of budgeting, personnel, co-ordinating sales, finance and production and allied subjects.

* * *

Symposium on Unique Subject

A feature of the fall meeting of the American Electrochemical society at Washington, Oct. 7-9, will be a symposium on "Materials for Use Under Extreme Conditions." Electrochemistry has provided the materials for use under many previously extreme conditions. It provides tungsten, chromium and vanadium for high-speed steel, chromium for stainless steel, high conductivity copper that fire refining could not provide, refractories for the high temperature needs that electric smelting itself brought forth and numerous others.

At the symposium, papers will be presented on materials suitable for resisting extreme conditions in the fields of corrosion, high temperatures, refractories, electrical insulation, chemical manufacture and others. It is desired to supplement these papers by compilation of a list of needs for super materials and of super materials already satisfactorily developed for exacting needs.

Nine More Concerns Join Metal Trades Body

Nine additional manufacturing companies have been admitted to membership in the National Metal Trades association. The following six have their headquarters in Chicago: Machinery Products Corp., screw machine products; Shelters Mfg. Co., sheet metal goods, cream and milk cans; Victor Products Corp., screw machine products; Archer Iron Works, contractor's equipment; Automatic Screw Machine Products Co., screw machine products; and Jones Superior Machine Co., woodworking machinery. The other three companies are the Timken Roller Bearing Co., Columbus, O.; A. D. Cook, Inc., deep well pumps and supplies, Lawrenceburg, Ind., and Morgan Gardner Electric Co., Harvey, Ill.

Convention Calendar

June 28-July 1—American Society of Mechanical Engineers. Spring-summer convention at Palace hotel, San Francisco. Calvin W. Rice, 29 West Thirty-ninth street, New York, secretary.

Aug. 2-4—Research congress. Meeting at Conneaut Lake Park, Pa. Robert Meyer, Hotel Conneaut, Conneaut Lake Park, Pa., is secretary.

Aug. 26-28—Iron and Steel institute. Summer meeting at Stockholm, Sweden, as guests of Swedish Ironmasters' association. G. C. Lloyd, 28 Victoria street, London, S.W. 1, is secretary.

Sept. 7-10—New Haven Machine Tool exhibition. Annual exhibit at Mason laboratory, Yale university, New Haven, Conn. Administrative offices, 400 Temple street, New Haven, Conn.

Sept. 20-25—American Society for Steel Treating. Eighth annual convention and exposition at Municipal Pier, Chicago. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Sept. 21-23—Society of Automotive Engineers. Production meeting at Hotel Sherman, Chicago. John Warner, 29 West Thirty-ninth street, New York, is manager of meetings department.

Sept. 27-Oct. 1—American Foundrymen's association. Second international congress and exposition at Michigan State Fair Grounds, Detroit, C. E. Hoyt, Marquette building, Chicago, is secretary.

Foundry Equipment Sales Reported as Good

Reports on business conditions, which were presented at the thirty-sixth meeting of the Foundry Equipment Manufacturers' association at the Hotel Cleveland, Cleveland, June 22, indicated that the industry is active at the present time. Many manufacturers reported their plants being operated at from 80 to 85 per cent capacity.

A feature of the business transacted by the organization was the perfection of arrangements for forming a special group of crane manufacturers to function within the association. Among those now included in this group are the Whiting Corp., Harvey, Ill.; Shephard Electric Crane & Hoist Co., Montour Falls, N. Y.; Northern Engineering Works, Detroit; Harnischfeger Corp., Milwaukee; and Cleveland Crane & Engineering Co., Wickliffe, O.

An interesting address was presented by W. H. Colston, vice president and general counsel of the Nickel Plate railroad, Cleveland, on "Earnings of the Railroads and Their Relation to Transportation Efficiency." Another absorbing address was presented by J. B. Courshon, National Traders Finance Co., Chicago, on "Financing Machinery Sales." The next event on the association calendar will be the annual banquet at Detroit, Sept. 27.

Frederick W. Stickle, president, Capitol Foundry Co., Hartford, Conn., was elected president of the Connecticut Foundrymen's association at the annual meeting held last week at Hartford. Carl S. Newman, Union Mfg. Co., New Britain, Conn., was elected secretary and George H. Holmes, McGlegan Foundry Co., New Haven, Conn., treasurer.

West Virginia's "Most Useful Citizen" Won Leading Place in Iron Ore Industry

From Clerk to Banker, at 28; Pioneer in Lake Superior Mine Development, and Benefactor, Run the Experiences in the Life of the Late E. W. Oglebay

By J. F. Froggett

CHOSEN as "The Most Useful Citizen in West Virginia" by the committee of his fellow citizens to the Panama-Pacific exposition at San Francisco in September, 1915, Earl W. Oglebay was probably as many sided a man as ever started out to make his own way in the world. Before he died at his home in Cleveland, June 22, he had achieved wealth through pioneering in the Lake Superior iron ore industry, had been associated with other important men in large industrial ventures, had attained a reputation as a patron of the fine arts, had done more than any other one man to advance the cause of education in his native state of West Virginia, and had "done his bit" during the World war when for two years he was selected by President Wilson to be federal food commissioner of that state.

The first phase of his busy life began with the graduation from Bethany college in 1871 at the age of 22 years. He entered his father's wholesale grocery store at Wheeling as a salesman. But he tired quickly of that and became a clerk in the National Bank of West Virginia at Wheeling. In six years, or at the age of 28 years, he became president of the bank. That same official position he retained for almost 50 years, or until his death.

* * *

Profiting by his banking experience, Mr. Oglebay turned it to good account when he entered the Lake Superior iron ore trade. He became interested in iron ore through his banking acquaintance with blast furnacemen in the Wheeling and Pittsburgh districts. When he went to Cleveland, in 1884, the total Lake Superior iron ore shipments in that year were 2,500,000 tons. He lived to see them rise to more than 55,000,000 tons. When he was 33 years old, Mr. Oglebay made his first trip to Duluth which was a frontier town. There he caught the vision of the future of the iron ore industry. First associated with the ore firm of Tuttle, Masters & Co., Cleveland, this later became Tuttle, Oglebay & Co. and still later it was Oglebay & Co.

* * *

Mr. Oglebay not only managed and operated the mines up north but also saw to the transportation of the ore to lower lake ports. Then he had to sell the ore, traveling far and wide to the blast furnaces. One day while in the Cleveland banking house with which he did most of his business, he asked the cashier, David Z. Norton, to come over and become a partner. This Norton did, assuming the financial direction of the firm which then became Oglebay, Norton & Co. in 1890. Several years ago the firm became a corporation and was turned over to the younger men, with Mr. Oglebay's nephew, Crispin Oglebay, as president.

* * *

Naturally Mr. Oglebay had been thrown into further contact with many other iron and steel men as his business acquaintance grew. He became a stockholder and afterward director in the Wheeling Steel Corp. and in the old Riverside Iron Works, both at Wheeling. Across the Ohio river from Wheeling in the town of Bridgeport, O., was situated in the early 90's the iron mills of the Aetna-Standard Iron & Steel Co., of which at that time John A. Topping was the secretary. Mr. Topping and Mr. Oglebay became friends and this friendship led to close business connections between the two for many year.

* * *

When the American Sheet Steel Co. took the Aetna-Standard works, Mr. Topping became a vice president and director. Mr. Oglebay never lost sight of him. Just about this time a number of Birmingham, Ala., and New York capitalists undertook to supplement the rising blast furnace and rolling mill industry at Birmingham by erecting a steelworks which they called the Tennessee Coal, Iron & Railroad Co.

John W. Gates enlisted the support of a group of financial and industrial experts including Grant B. Schley of the firm of Moore & Schley, of New York; Leonard C. Hanna and Earl W. Oglebay, both of Cleveland, James B. Duke and others. They built the Ensley works. Looking around for a practical man to head the company, Oglebay suggested Topping and he was elected chairman of the board.

Mr. Oglebay also was president of the Commonwealth Iron Co., organizer and head of the Ferro Machine & Foundry Co. of Cleveland, president of the Montreal Mining Co., and a director in many banking, vessel and other mining concerns.

* * *

In 1904 Mr. Oglebay returned to Wheeling and purchased the old Howell farm, owned by his wife's family. This farm he expanded into 1200 acres and named "Waddington Farms," a model in all sorts of agricultural experimentation on practical lines. Using this as an object lessen to West Virginians, he further contributed agricultural buildings to Bethany college and the new agricultural building at the West Virginia university at Morgantown, W. Va., known as "Oglebay Hall."

Fifteen years ago he became a member of the state board of education.

Current Statistics of Industry

Automobile Output Turns Down in May

Washington, June 29.—May production of motor vehicles, as reported to the department of commerce, was 394,781 passenger cars and 51,374 trucks, of which 371,595 passenger cars and 48,082 trucks were made in the United States, and 23,186 passenger cars and 3292 trucks were produced in Canada. This was a slight drop from the May figures. The output for the first five months of the year of passenger cars and trucks was 2,043,000, an increase over that for the corresponding period of 1925 of 15 per cent:

The table below is based on figures received from 173 manufacturers for recent months, 65 making passenger cars and 125 making trucks. Figures on truck production also include fire apparatus, street sweepers and busses. The table follows:

Passenger Cars

Totals for United States and Canada

	1923	1924	1925	1926
Jan.	228,860	293,822	213,851	284,153
Feb.	260,320	343,444	253,955	335,639
March	427,038	357,006	334,214	399,376
April	351,622	346,355	393,262	402,577
May	358,646	286,266	384,548	394,781
June	343,985	225,034	366,510	
July	303,497	244,503	360,124	
Aug.	318,848	255,193	223,517	
Sept.	302,340	263,468	274,227	
Oct.	338,469	260,845	408,017	
Nov.	288,810	204,316	337,435	
Dec.	279,862	182,028	286,141	
Totals	3,702,391	3,262,764	3,835,801	1,816,527

Trucks

Totals for United States and Canada

	1923	1924	1925	1926
Jan.	20,506	30,627	28,202	32,735
Feb.	23,283	32,756	34,481	40,878
March	36,619	36,270	45,179	48,705
April	39,641	37,766	47,983	53,301
May	45,677	35,112	45,718	51,374
June	42,453	28,884	38,150	
July	31,703	26,227	41,870	
Aug.	32,195	28,503	37,849	
Sept.	29,626	31,829	60,482	
Oct.	31,515	32,332	46,012	
Nov.	29,166	27,766	40,048	
Dec.	28,862	27,324	34,487	
Total	391,246	375,426	500,461	226,997

Enameled Orders Increase

Washington, June 29.—Orders received for sanitary enameled ware in May showed an increase over April, according to reports of 21 manufacturers to the department of commerce. Orders received for baths totaled 124,479 compared with 110,476 while lavatories gained from 120,139 to 129,327 and sinks from 119,236 to 126,732. Miscellaneous orders gained from 51,180 to 59,786 in the April-May period. Unfilled orders for baths and for total small ware decreased in May.

May Sales of Foundry Equipment Drop

Cleveland, June 29.—Unfilled orders for foundry equipment as of June 1 were valued at $524,382, a gain over May 1 when the total was $506,214. Sales in May dropped to $425,638 from $434,626 in April, but were 22 per cent ahead of May 1925, according to reports of 10 manufacturers to the Foundry Equipment Manufacturers' association, Cleveland. May shipments totaled $415,082 a gain of 1½ per cent over that month in 1925 and a gain of 3 per cent over April. Further comparisons of sales, shipments and unfilled orders follow:

1925	Sales	Shipments	Unfilled orders
January	$ 304,724	$ 305,580	$ 431,656
February	326,887	277,855	421,918
March	469,324	348,589	446,895
April	345,907	325,951	539,539
May	332,175	407,339	539,232
June	334,424	318,442	463,431
July	353,560	352,602	460,383
August	580,864	388,370	457,925
September	296,437	351,121	598,143
October	424,054	400,646	544,041
November	480,327	414,148	518,794
December	416,610	472,144	593,455
Total	$4,665,300	$4,362,794	
1926			
January	$ 414,121	$ 445,377	$ 550,016
February	472,814	422,004	501,793
March	483,010	525,655	536,978
April	434,626	402,494	504,671
May	425,638	415,082	506,214
June 1			524,382
Total to May 31	$2,230,209	$2,210,612	

Tractor Shipments Drop

Washington, June 29.—May shipments of electric industrial trucks and tractors totaled 108 compared with 111 in April, according to reports of nine leading manufacturers. Exports increased from 4 to 9. Further comparisons follow:

SHIPMENTS OF ELECTRIC INDUSTRIAL TRUCKS AND TRACTORS IN NUMBERS

	Domestic		
1925	Tractors	All other types	Exports
Quarter ending March 31	45	259	41
Quarter ending June 30	49	280	50
Quarter ending Sept. 30	57	286	12
Quarter ending Dec. 31	41	295	25
1925 Total	192	1,120	128
1926			
Quarter ending March 31	44	310	17
January, 1926	21	86	4
February	15	96	5
March	11	128	8
April	17	90	4
May	12	87	9

Steel Castings Bookings Continue To Drop

Washington, June 29.—Bookings of steel castings in May continued the sudden drop started in April and totaled only 79,003 tons compared with 86,826 tons in April and 104,950 tons in March, according to reports of 107 companies to the department of commerce.

Railroad specialty bookings in May gained over April, but miscellaneous castings tonnage dropped. Production also slipped off in May, totaling 95,734 tons or 73 per cent of capacity compared with 105,735 tons and 81 per cent in April. Further comparisons of bookings and production follow:

BOOKINGS

Monthly average	Total net tons	Per cent capacity	Railway specialties net tons	Miscellaneous net tons
1913	57,184	67	27,600	29,584
1914	43,602	51	21,142	22,460
1915	64,252	72	29,966	34,286
1916	101,015	107	54,645	46,370
1917	88,394	88	34,529	53,865
1918	109,374	105	48,124	61,450
1919	44,120	41	13,692	30,428
1920	78,597	68	33,080	45,517
1921	29,707	26	12,210	17,497
1922	77,167	67	38,890	38,277
1923	88,790	75	40,318	48,472
1924	77,764	64	39,961	37,803
1925	75,041	60	31,386	43,655
May	63,827	51	22,817	41,010
Total 5 mos.	389,122	62	167,504	221,618
June	62,700	50	23,301	39,399
July	67,881	54	26,387	41,494
August	63,606	51	23,130	40,476
September	59,326	47	20,738	38,588
October	74,283	59	26,434	47,849
November	83,197	66	38,485	44,712
December	100,377	80	50,654	49,723
Total	900,492	60	376,633	523,859
1926				
January	106,186	81	51,557	54,629
February	93,364	71	41,236	52,128
March	104,950	80	44,507	60,443
April	*86,826	66	26,713	60,113
May	79,003	60	31,318	47,685
Total (5 mos.)	470,329	72	195,331	274,998

PRODUCTION

1926				
January	92,047	70	37,321	54,726
February	90,917	69	41,191	49,726
March	108,348	83	46,628	61,720
April	*105,735	81	41,446	64,289
May	95,734	73	42,087	53,647
Total (5 mos.)	492,781	75	208,673	284,108

*Revised.

Low Water Cuts Down May River Shipments

Pittsburgh, June 29.—Effects of low water on the rivers were manifested in reduced shipments of iron and steel products in May. Declines were recorded on all three rivers, Allegheny, Monongahela and Ohio, as follows: 1055 tons, 18,243 tons, and

12,200 tons respectively from the high levels of April. Iron and steel shipments for the past year follow:

	Allegheny river	Monongahela river	Ohio river
May	145	28,625	19,191
April	1,200	46,868	31,391
March	.....	34,666	25,675
February	250	23,577	20,223
January, 1926	30	16,535	16,700
December	610	20,506	37,423
November	530	25,800	49,041
October	15	22,200	25,266
September	3,560	31,430	22,987
August	.....	29,010	42,004
July	.....	23,960	35,835
June	132	30,000	27,791
May	735	32,479	42,466
April	797	23,350	18,375
March	200	22,328	27,000
Totals, 1923	1,064	291,689	190,336
Totals, 1924	56,720	266,074	216,138
Totals, 1925	7,479	304,217	365,844
Total, 1926 to date..	1,625	150,271	113,180

Total shipments of all products over the Allegheny river for May was 22,395 tons, as against 202,090 tons in April. The aggregate for the Monongahela was 1,972,767 tons compared with 1,919,679 tons for April. Shipments over the Ohio in May totaled 852,732 tons, as compared with 761,947 tons for April.

May Structural Bookings Best Since October

Washington, June 29.—May bookings of fabricated structural steel, computed from reports by 180 companies to the department of commerce, totaled 234,850 tons, the highest since October when 271,450 tons was booked as announced briefly in last week's issue. Actual bookings by the 180 companies having a monthly capacity of 263,915 tons, were 202,981 tons, or 77 per cent of capacity. Bookings for the first five months of 1926 are computed at 1,024,800 tons compared with 1,000,400 tons for the same period of 1925. Shipments in May were 237,900 tons or 78 per cent of capacity, compared with 244,000 tons in April at 80 per cent. Following are further comparisons:

1925	Actual tonnage	Per cent of capacity	Computed tonnage	Shipments computed
May	183,823	68	207,400	231,800
Total (5 mos.)	.....	....	1,000,400	1,049,200
June	229,130	86	262,800	284,850
July	217,834	81	247,050	250,100
Aug.	209,752	78	237,900	244,000
Sept.	216,428	80	244,000	240,950
Oct.	239,680	89	271,450	268,400
Nov.	191,170	71	216,550	225,700
Dec.	200,147	74	225,700	240,950
Total (12 mos.)			2,705,350	2,754,150
1926				
Jan.	161,408	59	179,950	207,400
Feb.	163,776	60	183,000	195,200
March	†183,137	68	207,400	247,050
April	‡190,354	72	219,600	244,000
May	*202,981	77	234,850	237,900
Total (5 mos.)	.....	....	1,024,800	1,131,550

†Reported by 198 firms with a capacity of 268,160 tons.
‡Reported by 192 companies with 266,240 tons capacity.
*Reported by 180 companies with a capacity of 263,915 tons.

Barrel Orders Lighter

Washington, June 29.—Steel barrel production in May totaled 581,962 pieces compared with 602,058 in April and 570,962 for May 1925 according to reports from 30 manufacturers to the department of commerce. Shipments also dropped, as did unfilled orders for delivery beyond 30 days. Unfilled orders for delivery within 30 days totaled 417,718 compared with 414,367 in April. Reports to the Steel Barrel Manufacturers institute from its members show 26.9 per cent of I. C. C. barrel capacity operated in May and 57.1 per cent of light barrels, with an average for the industry of 51.3 per cent. Institute members show shipments of 431,452 barrels, of which 106,267 went to New Jersey consumers. Volume of business of the members was $1,435,869 in May. Further comparisons follow:

	Production	Shipments	Unfilled orders for delivery within 30 days	Unfilled orders for delivery beyond 30 days
1925				
March	505,429	510,928	399,940	864,920
April	594,971	605,424	411,053	726,499
May	570,962	569,670	313,123	637,230
June	514,913	508,880	269,964	582,630
July	497,152	506,894	314,727	974,656
August	498,449	495,736	263,588	851,079
September	510,869	503,221	237,580	774,996
October	553,545	555,981	356,626	534,278
November	498,929	498,070	251,567	996,978
December	467,485	474,742	368,286	1,377,060
1926				
January	468,722	469,432	431,772	1,334,074
February	522,486	518,104	543,381	1,153,947
March	622,949	622,312	369,576	1,275,490
April	602,058	608,056	414,367	864,792
May	581,962	582,352	417,718	792,097

Bethlehem Employes Sign Up for Relief Plan

New York, June 29.—More than 90 per cent of the 70,000 employes of the Bethlehem Steel Corp. applied last month for participation in Bethlehem's relief plan, according to the final count. The plan, which was announced by President E. G. Grace in April, provides protection for employes and their families against the time of sickness or death. It brings under one management employes' beneficial association previously existing at many of the plants of the subsidiaries of the corporation, and provides uniform and more adequate benefits than were paid by the old individual associations.

Death benefits of $500 to $1500 are payable under the plan; sick benefits amount to $10 to $12 a week. Both are dependent on the annual earnings of the employe.

In addition to the support which the corporation will give to the plan, the employes entitled to benefits under it will make contributions ranging from $1 to $2 a month. The corporation will assume the entire cost of organization and administration of the plan. The affairs of the plan will be under the direction of local committees and a board of trustees, half of whom will be employes elected by those participating in the plan, the other members being appointed by the management.

Bethlehem has for a number of years had in force a pension plan for the payment of pensions to old employes and industrial accidents are taken care of by workmen's compensation laws.

General Employment in May Well Sustained

Washington, June 29.—Industrial employment in May was fairly satisfactory, government reports show. Contrary to expectation, a slight recession in employment in iron and steel plants was reported. Considerable unemployment still exists in the textile and shoe industries. In the metal working and machinery industries a general improvement is noted, overtime work being found necessary in some parts of the country.

Employment fell off during May in practically all of the bituminous coal fields of the country, except in West Virginia, where there was some increase in production and number employed. The anthracite fields are working at full production.

A general expansion is noted in metal mining in western states. The rubber industry, particularly in Ohio, also reported improvement. Viewing the country as a whole, building construction craftsmen are on a satisfactory employment basis, the employment service states.

Steel to Italy Free

Washington, June 29.—Among commodities added to goods to be imported into Italy temporarily free of duty under special conditions, as reported to the tariff division of the United States department of commerce, are hot rolled steel bars and raw ingots for the manufacture of rifles. The temporary concession is valid for three years, the minimum importation permitted being 100 kilos and the maximum time before re-exportation being one year. The announcement is made by the Italian government, the changes being included in a royal decree law.

Lawrence Berenson has been appointed receiver for T. P. Kelly & Co. Inc., 355 West Twenty-Sixth street, New York, graphite manufacturers.

Experts Preparing Report on Pig Iron Tariff

Washington, June 29.—Work is reported to be progressing satisfactorily in the iron and steel division of the tariff commission in connection with the proposed increased rate on pig iron. The final hearing was held April 20 since which time the experts of the commission have been preparing a report which they hope to be able to place before the advisory board of the commission soon.

Field work is reported to be progressing satisfactorily in the collection of domestic costs of fluorspar, which is being made at the order of the commission. It is possible that the experts of the commission will not have to go abroad but they may be able to base the foreign costs on invoice prices. The information in the hands of the commission shows that imports of fluorspar are about 40 per cent of production. The field work on the domestic costs will probably not be completed for two months.

Water Transport Aids Birmingham Steel

Birmingham, Ala., June 29.—That iron and steel products from the Birmingham district will soon be moving to Gulf and Atlantic seaboard ports by all-water haul and at a material saving in transportation costs was the prediction recently made here by William D. Nesbitt, president of the Warrior River Terminal Co.

"Private companies," said Mr. Nesbitt, "for a number of months have operated barge lines between Mobile and Tampa and Miami, Fla., and indications are this means of transportation will be greatly extended in the near future. For example, the Mississippi-Warrior Service of the Inland Waterways Corp. is adding to its present fleet 24 steel barges, which are 24 feet wide, 140 feet long, have a draft of only 7 feet, and are capable of carrying 590 tons of freight apiece.

"These barges will operate, not only on river points between the Port of Birmingham and Mobile, but between Mobile and New Orleans, permitting shipment up the river of cotton and other products from New Orleans and shipment down the river of iron and steel from Birmingham.

"Similar barge lines, I understand, are being planned between Houston and Galveston, Tex., and New Orleans.

"In anticipation of the increased movement of iron and steel products, cotton and other commodities along these routes, our company has purchased from the Southern Railway the Maxine branch of the Ensley-Southern railroad. This is a short-line road connecting the trunk line and switching district of Birmingham with the terminal of the Port of Birmingham Co., where transfers are made between the Mississippi-Warrior Service of the federal government and the rail lines."

Foundation Gets Gift

At a recent meeting of the Engineering Foundation, announcement was made of a gift of $100,000 by Edward Dean Adams to the Foundation and Engineering societies' library. Mr. Adams was guest of honor at the meeting and in appreciation of his service as vice chairman of the foundation for ten years was elected an honorary member for life. A committee has been appointed by the United Engineering society to seek an increase of funds for the Engineering Foundation and Engineering societies' library. No drive is planned but a well considered and persistent endeavor will be maintained to secure larger financial resources as opportunities for service develop.

The Engineering Foundation board voted financial to two important engineering research projects. An appropriation was made to aid Prof. R. S. McCaffery, head of department of metallurgy, University of Wisconsin, in continuing a study of blast furnace slags. This investigation was undertaken to determine the quality of different iron blast furnace slags as desulphurizing agents and the possibility of using in the blast furnace materials of higher sulphur content than is now usual. Financial assistance also was given Prof. J. B. Whitehead, Johns Hopkins university for a research in dielectric absorption of electric insulation.

Dominion Iron and Steel Passes Its Interest

Postponement of further payments of interest on the first mortgage bonds of the Dominion Iron & Steel Co., Montreal, Canada, and also of the consolidated mortgage bonds, has been announced by the president, R. M. Wolvin of the company. Mr. Wolvin is also head of the British Empire Steel Corp. This is the first step in the reorganization of the companies which have been seriously affected by lack of business. The consolidated mortgage bonds of the Dominion company were sold in the United States in November 1922. For the year ending Dec. 31, the Dominion Iron & Steel Co. showed a profit of $308,202. After depreciation, sinking funds, requirements and interest a loss of $631,344 is reported, reducing the profit and loss surplus to $429,647. The British Empire Steel Corp. reports a loss of $1,133,443 for the year of 1925, compared with an operating profit of $923,774 in 1924.

Canada Lifts Sales Tax from Oil Well Goods

Washington, June 29.—Further amendments to the Canadian budget proposals of April 15, 1926, for changes in the sales tax provisions under the special war revenue act of 1915, were adopted by the house of commons, according to a report to the department of commerce from W. J. Donnelly, assistant trade commissioner at Ottawa.

The following are exempted from the sales tax; Articles and materials, not to include permanent equipment, which enter into the cost of manufacture or production of goods by a licensed manufacturer or producer; wrought, seamless, or lap-welded iron or steel tubing less than 4 inches in diameter, threaded and coupled or not, when used only in oil wells, and material used in the manufacture of such tubing. Machinery and apparatus used only in the pumping of crude oil from wells, and articles and materials used in the manufacture of such machinery or apparatus.

Canadian Iron and Steel Production Gains

Toronto, Ont., June 29.—Pig iron produced in Canada in May totaled 72,762 gross tons, a gain of 8 per cent over the 67,607 tons produced in April, according to official government figures. For the five months ending May, the cumulative production of iron amounted to 300,010 tons, an increase of 22 per cent over the output of 245,009 tons made during the corresponding period of last year.

Reflecting the higher output of pig iron, the production of steel ingots and castings advanced to 89,513 gross tons in May, this being an increase of 12 per cent over the 79,936 tons of April. Steel ingots amounted to 85,604 tons against 76,046 tons in April, while castings aggregated 3909 tons against 3890 tons in the previous month. The cumulative production for the first five months of the year was 349,907 tons, as compared with 360,557 tons for the corresponding period of 1925.

Wagner Iron Sells Bonds

The Wagner Malleable Iron Co., Decatur, Ill., has offered through banks $200,000 of first mortgage 6½ per cent serial gold bonds. The purpose of the issue will be to make improvements of the company. The company manufactures malleable castings for railway equipment and the

motor field. It was organized in 1917.

American Plan Skyline Over San Francisco

"Graphic Proof" is the title of a pamphlet published by the Industrial Association of San Francisco, containing halftone illustrations of buildings erected in that city under the American plan, and an airplane view of the city showing the location of the buildings. In the preface it is said:

"In a few months it will have been five years since the American plan came to San Francisco to stay. They have been five eventful years. They have seen San Francisco become one of the freest cities in point of industrial relations in America. They have seen San Francisco change from a city beset with industrial strife to a community prosperous under the blessings of comparative industrial peace."

The American plan, it is added, has attracted hundreds of millions of dollars in capital. "Five years ago it was almost universally believed that it was impossible to erect a large building with American plan crews as mechanics. Today San Francisco's skyline stands as a living refutation of that statement."

The illustrations show skyscrapers, hotels, apartment houses, representing $221,236,782 worth of construction, done in less than five years under the American plan. The total number of buildings erected in the city under the plan from July 1, 1921 to March 1, 1926 is said to be 20,000.

The Hanging Rock district obtained its name from a cliff, about 400 feet high, the upper portion of which projects like the cornice of a building.

Industrial Business Changes

CLEVELAND PLANER CO., Cleveland, has appointed the H. A. Smith Machinery Co., Syracuse, N. Y., its exclusive representative in central New York territory for the sale of its open-side planers.

* * *

Hardinge-Cullerton Engineering Co., New York, has changed its name to Hardinge Oil Burner Corp.

* * *

Southeastern Foundry Co., Birmingham, Ala., has moved to 925 Forty-Sixth street, where its new foundry, machine shop and pattern shop have been completed.

* * *

Central Foundry Co., New York, has established an office at Dallas, Tex., in charge of Frederick Soble, who is state manager.

* * *

Leland Truck Equipment Co., Tulsa, Okla., has opened an office and warehouse at 2009 South Ervay street, in charge of Thomas M. Lamberth.

* * *

DesLauriers Metal Products Co., Detroit, has established a sales office at 823 Seaboard building, Seattle, in charge of John L. Wick.

* * *

American Bronze Corp., Berwyn, Pa., manufacturer of brass and bronze bearings and bronze bars, has changed its name to the American Non-Gran Bronze Corp.

* * *

Electrolabs Co., 2635 Penn avenue, Pittsburgh, manufacturer of oxygen and hydrogen generators and welding and cutting devices, has changed its name to the Gas Industries Co.

* * *

Erie City Iron Works, Erie, Pa., has opened an office at Cincinnati, O., in the Atlas Bank building, in charge of Henry C. Hill, Dayton, O.

* * *

Harrison Basket Co., Shelby, Mich., has reincorporated as the Harrison Mfg. Co. and will expand to include the manufacture of metal novelties in addition to its basketmaking.

* * *

Richmond Radiator Co., Chicago, has moved its offices and warehouse from 217 East Illinois street to 1531 South Peoria street, where larger space is available.

* * *

Iversen Tool Co., Tulsa, Okla., has established a shop and warehouse at Panhandle, Tex., in charge of Frederick Russell, and is building a warehouse 50 x 100 feet.

* * *

Hisey Wolf Machine Co., Cincinnati, O., has appointed the Federal Machinery Sales Co., 12 North Jefferson street, Chicago, distributor for its portable electric machine tools.

* * *

Corby Supply Co., St. Louis, has bought a building at 3942 West Pine boulevard, and will move there July 1, with its stock of compressed air, electric, gas, oil and steam driven tools and equipment.

* * *

North & Judd Mfg. Co., New Britain, Conn., manufacturer of automobile hardware, has bought the plant and business of the August Buerman Co., Newark, N. J., manufacturer of bits and spurs.

* * *

Threadwell Tool Co., Greenfield, Mass., has appointed the Tool Equipment Sales Co., 18 South Clinton street, Chicago, exclusive sales agent in Illinois, Wisconsin and eastern Iowa for its products.

* * *

Baird Road Machinery Co., Kansas City, Mo., manufacturer of street and road machinery, traffic signals and safety zone equipment, has moved its downtown office from Main and Seventeenth streets to 1908 Main street, where more space is available.

* * *

Cape Ann Anchor & Forge Co., Gloucester, Mass., manufacturer of hammered forgings, has appointed James B. Armstrong, 303 Fifth avenue, New York, its district representative. He also represents the Lebanon Drop Forge Co. and the Lebanon Steel Foundries Co., Lebanon, Pa.

* * *

Charles C. Phelps and Charles J. Schmid, 473 Getty avenue, Paterson, N. J., have been appointed representatives in New York and northern New Jersey for the Uehling Instrument Co., Paterson, the Williams Gauge Co., Pittsburgh, the National Boiler Protector Co., Dayton, O., and the combustion control division of the A. W. Cash Co., Decatur, Ill.

Construction and Enterprise

Concise and Timely Business Building Opportunities
from the Field of Industry

BRIDGEPORT, ALA.—Jacobs Mfg. Co., E. R. Jacobs manager, manufacturer of stoves, will install additional equipment.

MOBILE, ALA.—Mobile Steel Co., St. Joseph street, is expanding its operations and will install additional equipment.

LOS ANGELES—Pipe Auto Trailer Works Inc., East Seventh street, has let contract to J. M. Cooper, Rives-Strong building, for a 1-story plant 45 x 200 feet.

LOS ANGELES—Ahlberg Dual Transmission Co., 120 West Twenty-second street, Samuel Bryant engineer, manufacturer of automobile transmissions, is having plans made for a 1-story plant 100 x 120 feet at Culver City, Calif.

NEW BRITAIN, CONN.—Western Foundry & Supply Co. Inc., Charles A. Danberg and Edward Danberg, owners, has been incorporated with $50,000 capital to operate a brass foundry.

LAKE WORTH, FLA.—Owens Universal Joint & Gear Co. is having plans made for a plant at Jasper, Fla.

LAGRANGE, GA.—Lagrange Iron Works, L. C. Schaudies president, Morgan street, is taking bids on a foundry plant with 11,000 square feet floor space, for which equipment will be required.

CHICAGO—The Mitchell Co., 226 North Carpenter street, is having plans made for a 1-story machine shop 48 x 108 feet, by E. N. Braucher, 10 North Clark street.

CHICAGO—Economy Pump Machinery Co., R. H. Thomas president, 122 Curtis street, is having plans made for a 1 and 2-story plant.

CHICAGO—Tidewater Oil Sales Corp., E. Waldo Emerson general manager, 1445 West Thirty-seventh street, is taking bids on a 3-story addition 90 x 90 feet.

CHICAGO—Pheoll Mfg. Co., Mason Phelps president, 5700 Roosevelt road, has let contract to Heidel & Beck, 6235 South Michigan avenue, for a 1-story plant 62 x 349 feet. (Noted June 17.)

CHICAGO—A. B. C. Iron Mfg. Co., 510 North Dearborn street, has been incorporated with $2500 capital to manufacture iron and metal products by L. A. Goldreich, B. L. Goldberg and Bernard Spiro. B. L. Goldberg, 7 South Dearborn street, is attorney.

CHICAGO—Goodman Mfg. Co., C. H. Strawbridge president, 4834 South Halsted street, has let contract to Adams Construction Co., 217 North Clarkson court, for an addition for warehouse, pattern shop and heat treating shop. (Noted June 24.)

CHICAGO—Davis Tool & Equipment Co. Inc., 722 West Washington boulevard, has been incorporated with 250 shares no par value to manufacture machinery, tools and engines by T. J. Davis, Gertrude Murphy and M. P. Davis. Netherton & Netherton, Marquette building, are attorneys.

CHICAGO—Universal Power Supply Co., 140 North Dearborn street, room 1010, has been incorporated to manufacture radio and electrical devices by F. Rivkin, George D. Kimball and Arthur A. Plotke. Corporation Maintenance & Service Co., 140 North Dearborn street, is correspondent.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

Chicago—F. L. Beesley & Co., 38 South Dearborn street has been incorporated with 100 shares no par value to deal in iron, steel, manganese, coke, copper and other materials, by Frank L. Beesley, Herbert Bebb and John A. Russell. Harris, Reinhardt & Russell, First National Bank building, are attorneys.

CICERO, ILL.—Roth Mfg. Co., Edward N. Roth president, 1600 South Kilbourn avenue, Chicago, has let contract to George P. Cullen, 2940 West Lake street, Chicago, for a 1-story plant 80 x 140 feet. (Noted April 22.)

MORRIS, ILL.—Illinois Foundry Specialty Co., subsidiary of the Western Foundry Co., Chicago, will build a 1 and 2-story addition, for which equipment will be required.

ROCKFORD, ILL.—Barber-Colman Co., manufacturer of gear-cutting and textile machinery, is building a 5-story addition.

TROY, ILL.—City council has appropriated $90,000 for establishment of a municipal waterworks system.

ANDERSON, IND.—Remy Electric Co. is having plans made for an addition to its plant. C. E. Wilson is general manager.

INDIANAPOLIS—Murray Body Co., Detroit, in charge of the Guardian Trust Co., receiver, has been authorized to lease part of plant of Marmon Motor Car Co., Indianapolis, and spend $200,000 in equipment to make bodies for the latter.

WINCHESTER, IND.—Cook Bros. Foundry Co., gray iron castings, is having plans drawn for a 1-story addition 50 x 80 feet.

OTTUMWA, IOWA—John Morrell & Co., T. H. Foster president, South Iowa street, will build a machine shop in connection with its packing plant.

CHANUTE, KANS.—Peerless Oil Refining Co. has contracted with Graver Corp. for installation of a 1000-barrel cracking unit.

WICHITA, KANS.—Genda Gas & Supply Co., capital $100,000, has been chartered to operate a natural gas business and deal in supplies.

COVINGTON, Ky.—Michaels Art Bronze Co., Scott street, has let contract to B. T. Wisenall Co., Crescent street, for a 4-story addition 60 x 62 feet. (Noted May 6).

NEW ORLEANS—Clay W. Beckner, capital $80,000, organized to manufacture and distribute automobile vehicles and parts. Clay W. Beckner is president.

NEW ORLEANS—Great Southern Wire Bound Box Co., capital $50,000, incorporated by Edward B. Martin, president, Pascagoula, Miss., and J. H. Overstreet, Hattiesburg, Miss., secretary-treasurer.

SHREVEPORT, LA.—L. E. Myers Co., Chicago, has contract for construction of transmission line for Southwestern Gas & Electric Co. from Shreveport to Texarkana, Ark.

BOSTON—Devices Corp. has been incorporated with $100,000 capital to manufacture vacuum cleaners, gasoline savers and other appliances by H. Ross Maddocks president, Perley A. Brewer, 266 Brookline avenue, Boston, treasurer and John A. Maddock.

SOUTH BOSTON, MASS.—Boston Cutting Die Co., 202 A street, has let contract to Wilson & Tomlinson, 201 Devenshire street, Boston, for a 1-story plant 60 x 80 feet.

WORCESTER, MASS—Worcester Hardware & Supply Co. Inc. has been incorporated to manufacture hardware and tools with $25,000 capital by Wendall Benjamin, 25 Marion avenue, Worcester, president, Simon Goodman, treasurer, 18 North Woodford street and Samuel Seder.

BAY CITY, MICH.—Chevrolet Motor Co., General Motors building, Detroit, is taking bids on a heat treating plant, one story, 60 x 130 feet.

BENTON HARBOR, MICH.—General Ozone Co. has been incorporated with $50,000 capital and 5000 shares no par value to manufacture ozone and other disinfecting appliances by Siegfried Held, 566 Colfax avenue, Charles K. Minary and W. H. Baker.

IRON RIVER, MICH.—Cambrian Mining Co. has been incorporated to develop and operate iron mines, with $100,000 capital, by D. H. Campbell and Michael Kelly, Iron River, and E. L. Laing, Stambaugh.

MARQUETTE, MICH.—Lakeside Refrigeration Co. has been incorporated with $100,000 capital to manufacture refrigerating machinery by John M. Longyear Jr., 216 East Hewitt avenue, Hjalmar P. Beckman and Oscar G. Anderson.

JOPLIN, MO.—Butchart Mfg. Co., $100,000 capital, organized to manufacture mining and milling machinery. Grayston & Grayston, McKinley building, are attorneys.

KANSAS CITY, MO.—Vulcan Mfg. Co., 1511 Cypress avenue, manufacturer of ironing and washing machines, has bought a site on which to build a new plant.

KANSAS CITY, MO.—Anderson-Pitt Corp., manufacturer of electrical heaters, has leased triangular building, 110 x 105 x 150 feet at 209 Goodrich place for new plant.

KANSAS CITY, MO.—Central Refining Co., $16,000 capital, chartered to refine oils and manufacture petroleum products. G. W. Duvall, American Bank building, is attorney.

KANSAS CITY, MO.—Cook & O'Brien Construction Co. has contract for building Santa Fe extension of 56 miles from Mantor Kans., to Baca county, Colo.

KANSAS CITY, MO.—Peerless Car & Equipment Co., capital $200,000, chartered to manufacture automotive equipment. John D. Wendorff, Scarritt building, is attorney.

KANSAS CITY, MO.—S. & S. Mining Co., $30,000 capital organized to develop lead and zinc mining properties, Madden, Freeman & Madden, Scarritt building, attorneys.

KANSAS CITY, MO.—Vulcan Mfg. Co., manufacturers of washing and ironing machinery, has acquired a site 115 x 273 feet

for new building. W. C. Bauer, 3931 College street, is president.

STE. GENEVIEVE, MO.—Geneva Mfg. Co. has been incorporated with $50,000 capital to manufacture washing machines. John W. Schwent is secretary-treasurer.

ST. LOUIS—Moloney Electric Co., T. O. Moloney president, Seventh and Hickory streets, is considering plans for a plant.

ST. LOUIS—Terminal Railroad association, Union station, will build a car repair shop for which equipment will be required.

ST. LOUIS—Steel Fixture Co., Topeka, Kans., Harry K. Brooks, president, is planning a 1-story addition for warehouse and distributing station.

ST. LOUIS—William Schaefer Wagon & Auto Body Co. has been incorporated with $10,000 capital by William Schaefer, 1307 Cass street, and associates.

ST. LOUIS.—Robert Zeigler & Son Machine Co., 210 Vine street, organized with $15,000 capital. F. J. Larson, 802 Wainwright building, is attorney.

ST. LOUIS—H. C. Atkins Mfg. Co., 2318 Randolph street, has been incorporated with $200,000 capital to manufacture plumbing supplies by John W. Gerdon and Lester A. Crancer.

MORRIS PLAINS, N. J.—New Jersey Oil Heat Corp. has been incorporated with $125,000 capital to manufacture oil heaters by Berthold Leinhardt, Aquilina Leinhardt, Morristown, N. J.; F. C. Becker, Morris Plains, N. J.; and E. S. Marriotte, Upper Montclair. David F. Barkman, Morristown, N. J., is attorney.

NEWARK, N. J.—Acme Metal Goods Mfg. Co., Orange and Ogden streets, will rebuild its burned plant and install new machinery for that destroyed. Charles Fischer is manager.

PATERSON, N. J.—N. J. & Conn. Dri-Steam Valve Sales Inc. has been incorporated with $50,000 capital to manufacture valves by Thomas Gappa, Joseph J. Gappa, Antonio Pocacane. Viviano & Kehoe, Paterson, are attorneys.

BROOKLYN, N. Y.—Marko Storage Battery Co., 1402 Atlantic avenue, has organized new company under same name, P. M. Marko president, to expand business and add to plant.

BROOKLYN, N. Y.—Engstrand Marine Propeller has been incorporated with $75,000 capital by G. D. Engstrand and B. Austin. C. J. Pearson, 68 William street, New York, is attorney.

NEW YORK—Clyde Iron Works Sales Co., Locust avenue and 136th street, has had plans drawn for a 1-story plant 76 x 128 feet.

NEW YORK—Circle Pleating Machinery Corp. has been incorporated with $50,000 capital to manufacture machinery by J. Stein, F. G. Baum and J. E. Weil. H. S. Bodin, 14040 Broadway, is attorney.

NEW YORK—Vibriscope has been incorporated with $50,000 capital to make scientific instruments by P. Davey, E. M. Sawtelle and E. M. Wales. D. A. Sterlin, 261 Broadway, is attorney.

NEW YORK—N. K. C. Holding Corp. has been incorporated with $5000 capital to manufacture machinery by J. Raphael, A. Sisman and E. Beaver. Korkus & Korkus, Beekman street, are attorneys.

NEW YORK—Steerable Trailer Corp. has been incorporated with $2000 capital to manufacture automobile trailers by W. Braat and V. Ekelund. E. F. Eiseman, 41 Park Row, is attorney.

NEW YORK—Manhattan Steel Erection Corp. has been incorporated with $5000 capital by S. E. Friedland, J. D. Evers and L. M. Fox. M. C. Levine, 18 East Forty-first street, is attorney.

NEW YORK—Peer Taximeter Corp. has been incorporated with 100 shares no par value by J. W. Galbraith and A. J. Sullivan. J. H. Buck, 2 Rector street, is attorney.

NEW YORK—Accurate Mechanical Parts Corp. has been incorporated with 1000 shares no par value by F. W. Annes, and A. H. Spero. J. H. Buck, 285 Madison avenue, is attorney.

NEW YORK—Mott & McElrath Engineering Corp. has been incorporated with $9000 capital to manufacture machinery and hardware by W. C. Mott and J. F. Connell. T. McElrath, 308 West Twenty-ninth street, is attorney.

NEW YORK—Gold Seal Iron Works has been incorporated with $20,000 capital by H. Posner, D. Mirkin and M. Mittag. J. J. Bakerman, 101 Joralemon street, Brooklyn, is attorney.

NEW YORK—A. C. Chesley Co., 704 East 133rd street, Adolph J. Chesley president, manufacturer of fireproof doors and similar products, will build a 1-story plant 100 x 150 feet.

NEW YORK—Safety Guards & Metal Specialties has been incorporated with $50,000 capital by R. Abrams, K. C. Freeman and J. C. Dioguardi. A. F. Upson, 30 Church street, is attorney.

NEW YORK—National Safety Oil Burning Co. has been incorporated with $150,000 capital by B. Seaboldt, S. Bennett and W. F. Batterham. E. C. VanDyke, Philadelphia, is attorney.

NEW YORK—Fleetwood Electric Corp. has been incorporated with 550 shares no par value to manufacture machinery by R. Atkins and S. W. Stern. W. L. Berk, 70 West Fortieth street, is attorney.

NEW YORK—Saruya Engine Co. has been incorporated with $5000 capital to manufacture electrical and radio equipment by A. L. Saruya, G. S. Saruya and D. B. Dunlop. Wantrowitz, Esberg & Solius, 320 Broadway, are attorneys.

NORTH TONAWANDA, N. Y.—Beacon Devices has been incorporated with 1000 shares no par value to manufacture automotive devices by A. C. Joffe, and F. Druss. W. W. Lesselbaum, 150 Broadway, New York, is attorney.

STATEN ISLAND, N. Y.—Colonial Tank & Installation Co., 1983 Richmond Terrace, has been incorporated to manufacture steel tanks for oil and gasoline storage and other purposes, and steel fabrication.

SYRACUSE, N. Y.—Utility Tire Tool Corp. has been incorporated with 400 shares no par value by J. Orester and D. P. Gorman. B. Wiles, Syracuse, is attorney.

AKRON, O.—Akron Metal Spinning Co. has been incorporated with $10,000 capital by Robert I. Azar, F. J. Stolitzka, George E. Dundon, William M. Dice and Jesse P. Dice.

ALLIANCE, O.—Alliance Tank Co. has been incorporated with $60,000 capital to manufacture gasoline storage tanks by E. L. Coble, president, A. L. Haidet vice president and general manager, Alvin Haidet and John R. Quick. Will build plant 50 x 80 feet.

CLEVELAND—H. K. Ferguson Co., industrial engineer, has been awarded contract by United States Cast Iron Pipe & Foundry Co. for large addition to its plant at Scottdale, Pa.

CLEVELAND—Columbian Vise Mfg. Co., recently organized to succeed the Columbian Hardware Co., has let contract to J. L. Hunting Co. for a plant at 9021 Bessemer

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.50
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	10.00 to 11.00
North African low phosphorus	9.25 to 9.75
Swedish and Norwegian low phosphorus, 68 per cent	10.25 to 10.75
Swedish foundry or basic, 66 to 68 per cent	9.00 to 9.50
Spanish foundry or basic, 50 to 54 per cent	8.75 to 9.25
North African foundry and basic 50 to 54 per cent	8.50 to 9.50

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent	nominal
Indian minimum 47 per cent	nominal
Caucasian, 53 to 55 per cent	
Washed	40 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, imported duty paid eastern tidewater, per net tons	17.00 to 18.00

avenue, two stories 75 x 160 feet, for the manufacture of forged clamps and vises.

COLUMBUS, O.—Kinnear Mfg. Co., Yeoman and Field avenues, has let contract to the Middle States Construction Co., 457 Cleveland avenue, for a 1-story addition 140 x 147 feet, part to house a galvanizing plant.

MANSFIELD, O.—Westinghouse Electric Products Co., East Pittsburgh, Pa., E. M. Olin, manager, has started construction of factory and warehouse buildings, four and one story, at its plant here.

CARDIN, OKLA.—Commerce Mining Co. announces rebuilding of Blue Goose lead and zinc mine buildings recently destroyed by fire. New buildings will be all-steel and cost approximately $150,000. Jim Robinson, Miami, Okla., is president.

CLEVELAND, OKLA.—Murray Tool & Supply Co. has established a branch warehouse and shop at Amarillo, Tex., in charge of T. B. Hudd.

CUSHING, OKLA.—Cushing Refining & Gasoline Co., Rex Winget, general manager, contemplates installation of a cracking still at its refinery.

GRANDFIELD, OKLA.—Bell Oil & Gas Co. has contracted with Universal Oil Products Co. for installation of a 1000-barrel cracking still at its refinery.

TULSA, OKLA.—Iverson Tool Co. is building a shop and warehouse building 50 x 100 feet at Panhandle, Tex.

TULSA, OKLA.—Lebanon Lead & Zinc Co., capital $75,000, incorporated by A. L. Claus, 109 North Lawton, J. H. Hanson and J. F. Orr to engage in mining operations.

TULSA, OKLA.—General Oil Tool Co., capital $25,000, chartered by John Sherman, 144 East Twenty-first street, F. E. Brock and William Irwin to manufacture oil field specialties.

TULSA, OKLA.—Carter Oil Co. has purchased oil properties in Osage from C. J. Wrightsman and others and plans erections of gasoline plants with probable construction of pipe lines. B. Gooderham, Exchange National bank building, is purchasing agent.

WILSON, OKLA.—Oklahoma Asphalt Co. has leased oil refinery of Nyanza Refining Co. and is adding equipment to manufacture road oils and asphalts. C. R. Hemingway is president.

PORTLAND, OREG.—Portland Electric Power Co. will install a 31,500-horsepower turbine to provide additional power in emergencies.

PHILADELPHIA—Schneider-Bowman Co., VanDyke street, iron and steel castings, has given contract to Paul Brosa, 2511 West Huntington street, for a 1-story addition 100 x 100 feet.

PHILADELPHIA—Thomas Wilbraham Green Engineering Co. has been incorporated with $50,000 capital to manufacture engines, boilers, blowers and other machinery by Thomas W. Green, 2032 East Madison street, Michael P. Weimar and Harry C. Kuser.

CHATTANOOGA, TENN.—Casey Hedges Co., Vulcan street, manufacturer of tanks and boilers, will build a 1-story addition for the manufacture of steel barrels and drums.

KNOXVILLE, TENN.—Southern railroad, Washington, has let contract to the Virginia Bridge & Iron Co., Roanoke, Va., for a car repair plant.

BRECKENRIDGE, TEX.—Self Serving Gasoline & Oil Machine Co., capital $12,500, incorporated by Charles Clark, J. E. Thomson and W. B. Bennett.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$40.00 to 43.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	40.00 to 43.00
Ohio, No. 2	35.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	40.00 to 43.00
Kentucky, No. 2	38.00 to 40.00
Missouri, No. 1	40.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00
Georgia and Ala. No. 1	40.00 to 45.00
Georgia and Ala. No. 2	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00

DALLAS, TEX.—International Airways Co., capital $250,000, chartered by J. E. Whitehead, Santa Fe Building, J. H. Hill and Guy I. Warren to operate air stations and maintain repair shops and parts for airplanes.

DALLAS, TEX.—Magnolia Pipe Line Co. is laying a 4 and 6-inch line from Randado field in Jim Hogg county to its tank farm near Oilton, Tex. T. J. Fitch, Magnolia building, is chief engineer.

PECOS, TEX.—Pecos Valley Southern Railway Co. is taking bids for a 1-story shop building 60 x 100 feet.

SAN ANTONIO, TEX.—Ardiff H. Lanoue, metal products, incorporated with $2,500 capital by R. J. Ardiff, W. E. Lanoue and B. M. Conrods.

PORTSMOUTH, VA.—Joseph M. Corson, W. I. Overstreet and E. H. Owen have established a brass foundry at 216 Columbia street.

PULASKI, VA.—Pulaski Engineering Works, Jay J. Seaver president, 2422 Euclid avenue, Cleveland, is building a plate and structural steel fabricating plant.

ABERDEEN, WASH.—Grays Harbor Railway & Light Co. will start work on hydroelectric project on Cowlitz river to supply industrial power to paper mills.

MADISON, WIS.—A charter has been granted to the Wisconsin Water Softener Co., capital stock $25,000, to manufacture and deal in laundry equipment, water filters, softeners, coolers and heaters. Incorporators are R. L. Badeaux and C. H. Badeaux.

MARION, WIS.—Architects Smith & Brandt, Manitowoc and Appleton, Wis., are preparing plans for a new high school to include a vocational training institute as well as a graded school, and cost about $200,000.

MENASHA, WIS.—Council has authorized purchase of 600-horsepower generator for city light and water plant and 6-cylinder diesel engine to supplement present power unit.

MILWAUKEE—An addition, 59 x 60 feet, part 2-story will be made to the public garage and repairshop of M. L. Kuehn & Son at 1627 Green Bay avenue.

MILWAUKEE—The Milwaukee Electric Railway & Light Co. has plans for a $100,000 addition to the steam generating plant at Oneida street and Edison avenue. John Anderson is vice president and chief engineer.

MILWAUKEE—Bentley Bros., 880 South Pierce street, have been given the general contract to build a $200,000 branch house for the Mack International Motor Truck Co. at Highbury place and Grand avenue, Milwaukee. It will be 200 x 425 feet, of brick and steel and concrete.

MILWAUKEE—J. M. Nash Co., 842 Thirtieth street, has been incorporated with 1000 shares no par value to continue the business formerly conducted by J. M. Nash. Expansion of the plant will follow, to increase production of special tools and machinery for woodworking plants.

RACINE, WIS.—Standard Foundry Co., Arthur R. Janes president, has had plans made by A. A. Wickland & Co., 5 South Wabash avenue, Chicago, for an addition 110 x 240 feet for an electric steel foundry.

RACINE, WIS.—American Skein & Foundry Co. has let contract to Nelson & Co. for a finishing room for piano plate work and remodeling of other departments, for which additional equipment will be required.

SPOONER, WIS.—Siems, Helmers & Schaffner, 514 Guardian Life building, St. Paul, Minn., has been awarded the contract by the Wisconsin Hydro-Electric Co., Amery, Wis., for a dam and power plant with modern equipment on the Namakagon river near Spooner.

TWO RIVERS, WIS.—Steven Gruman and J. H. Barrett have opened a new machine shop in the Baetz building and will do general tool and die work and engraving on metals, ivory and jewelry. Both members of the partnership have been connected with local aluminum goods factories for many years.

WEST ALLIS, WIS.—Architects Lindl & Schuette, 115-119 Grand avenue, Milwaukee, have been selected to prepare the plans for the proposed new West Allis vocational school, which will cost about $150,000. Fred H. Haker is president of the school board.

WHITEWATER, WIS.—The Whitewater Bridge Co. is successful bidder at $103,377, for the construction of a concrete highway and several bridges on state highway project No. 2667, the Whitewater-Richmond trunk highway.

Business in Canada

CALGARY, ALTA.—City commissioners have approved plans for addition to No. 1 substation on Ninth avenue west. The building will cost $10,000, and $18,000 will be spent on equipment. J. M. Miller is city clerk.

FERNIE, B. C.—A. B. Sanborn, general manager of the East Kootenay Power Co., announced that work would be started almost immediately on a large auxiliary steam power plant here or at Elko, B. C., to develop 5000 horsepower.

NEW WESTMINISTER, B. C.—The ratepayers will vote on a by-law to fix the assessment of the proposed Poplar Island pulp plant here, by the Canadian Rayon Co. Ltd., of which S. B. Bump is president. H. L. Edmonds of New Westminister is solicitor.

VANCOUVER, B. C.—W. D. Harvie, secretary, Vancouver harbor commissioners, will receive bids until July 10, for two 6-wheel switching steam locomotives for the Commissioners Terminal railway here.

SELKIRK, MAN.—The Manitoba Foundries Co., whose plant was recently destroyed by

fire, has started to rebuild on old site. Machinery and tools will be purchased.

DARTMOUTH, N. S.—The Halifax Shipyards, Ltd., Halifax, N. S., proposes to start work at once on a plate shop here to cost $10,000.

BARRIE, ONT.—The Ruberarium Products Co., manufacturers of electrical equipment, switchboard equipment, etc., has secured a building here which will be equipped for manufacturing purposes. Some machinery and general equipment will be purchased. D. Miller is general manager of the company.

BELLEVILLE, ONT.—The rolling mill building here dismantled some time ago by the Steel Co. of Canada Ltd., Hamilton, Ont., has been taken over by the Houston Co., of Tweed, Ont., who will convert the building into a sash and door factory. Machinery and woodworking equipment will be purchased.

HAMILTON, ONT.—Walter B. Champ, managing director of the Hamilton Bridge Works, Ltd., announces that the west end plant of the company which has been closed for three years will be reopened soon.

LINDSAY, ONT.—The mills of the Gull River Lumber Co., and the Lindsay Woodworking factory here were destroyed by fire June 17. It is understood the owners will rebuild without delay and that considerable machinery will be purchased.

LONDON, ONT.—Plans are being prepared by Watt & Blackwell, Bank of Toronto building, for addition to plant here for the Kellog Co. of Canada, Ltd., to cost $100,000.

NIAGARA FALLS, ONT.—Bids are being received by Norman Mann, architect, 1950 Main street, for addition to the plant of the Niagara Wire Weaving Co., Robinson street..

OSHAWA, ONT.—Hutton & Souter, architects, 6 James street, Hamilton, Ont., are preparing plans for addition to the plant of General Motors of Canada, Ltd., 52 Mary street, 90 x 600 feet 1-story, monitor type. According to R. S. McLaughlin, president improvements at the Oshawa works are also proposed including additional modern machinery and tools to increase production.

PORT ARTHUR, ONT.—Negotiations are under way between the city and the Nipigon Corp., whereby the latter proposes to build another pulp and paper mill here to have an ultimate capacity of 400 tons per day and represent an expenditure of about $10,000,000.

RIDGEWAY, ONT.—Town council contemplates construction of waterworks plant and system here to cost $50,000.

ST. CATHARINES, ONT.—The Engineering & Machine Works of Canada, Ltd., is in the market for a flanging press for plate work.

STRATFORD, ONT.—The Kroeler Mfg. Co., Ontario street, has let a number of contracts in connection with an addition, including that for reinforcing steel to the Stratford Bridge & Iron Works, Erie street.

TRENTON, ONT.—The Benedict Proctor Mfg. Co., manufacturer of silver plate ware, jewel boxes, etc., will build a large addition to factory here.

WATERFORD, ONT.—The Michigan Central railway is having plans prepared for a coal handling plant near here to cost $20,000. A Leslie, St. Thomas, Ont., is superintendent of building.

MISTASSINI, QUE.—The Mistassini Power & Paper Co. Ltd., has been granted a Quebec charter. The company has taken over the timber limit and two waterpower sites which were recently purchased by the Leaside Engineering Co., Leaside, Ont., from the Quebec government. The new company will erect complete newsprint mill with a capacity of 200 tons per day, and will develop its own electric power. S. A. Wallberg is president and principal owner of the new company, and John Staller is general manager. While the new plant is under construction the company will have its engineering offices in the Drummond building, Montreal, Que.

New Trade Publications

MOLDING MACHINES—A description of a new type of molding machine that straddles the sand pile is given in a pamphlet recently published by the Osborn Mfg. Co., Cleveland.

MODULATING VALVES—Jenkins Bros., New York, have issued a bulletin illustrating construction and operation of their modulating valve for use on heating lines.

ANTI SLIP TREADS—American Abrasive Metals Co., New York, has issued a leaflet on flooring and stair treads designed to eliminate slipping and accident. It is illustrated to show the forms and varieties of its products.

CASTINGS—Sivyer Steel Casting Co. has issued a broadside illustrating the variety of steel castings it makes, and presenting the argument that quality counts for most in them.

COOLING FANS—Fan equipment to cool hot spots in industrial plants and make working conditions better, with the result of larger production, is described in a leaflet by the American Blower Co., Detroit, Mich.

FEED WATER REGULATOR—Simplicity of construction and ease of installation, with accuracy of regulation are claimed for its new type of feed water regulator, described in a bulletin by the Atlas Valve Co., Newark, N. J.

HEAT INSULATION—Celite Products Co., New York, has issued a booklet explaining the logic of insulation and advantages to be obtained through its use, with particular application to its products.

SILENT GEARS—Gears made of its product instead of metal are featured in a catalog by the Fibroc Insulation Co., Valparaiso, Ind. Silence and wearing qualities are presented as advantages in their use. Data tables relating to gears are given.

HAND CRANES—An attractive and well illustrated book has been issued by Herbert Morris Inc., Buffalo, N. Y., covering its line of hand cranes for various uses in industry. Various installations are shown and details of construction are shown and described.

HELICOIL SHEATH WIRE UNITS—A bulletin by the General Electric Co., Schenectady, N. Y., describes its heating unit and shows applications for various types of heaters for specific purposes, in which it is bent into forms to apply the heat as desired.

ARC WELDING—The General Electric Co., Schenectady, N. Y., has issued a catalog showing the adaptability of electric arc welding. The catalog is illustrated by many views of materials welded by this process at the plant of the firm.

PIPE MACHINES—Hall-Will, Erie, Pa., has issued a broadside and a circular of specifications of its new portable electric pipe machine, featuring malleable iron and steel construction, built-in truck, silent chain drive, friction clutch and other details.

PIPE INSPECTION—A booklet on the inspection of cast iron pipe to assure uniform section and other desirable qualities, has been issued by Robert W. Hunt Co., Chicago. Some of the preventable defects are shown in illustrations.

STEEL SASH—David Lupton's Sons Co., Philadelphia, has issued a catalog on projected steel sash for offices, schools and commercial buildings. This sash is made in two types and the distinguishing feature of each is described and illustrated by drawings.

CHAIN DRIVES—Industrial chain drives for economical transmission of power are the subject of a booklet by the Boston Gear Works Sales Co., Norfolk Downs, Mass. Various types of chain for this purpose are shown and data for their selection presented in tabular form.

VACUUM PUMPS—Cycloidal vacuum pumps for use to produce vacuum of 15 to 20 inches of mercury, for suction rolls, flat boxes, dryers, felt conditioners and other papermill service are described and illustrated in a bulletin by the Connersville Blower Co., Connersville, Ind.

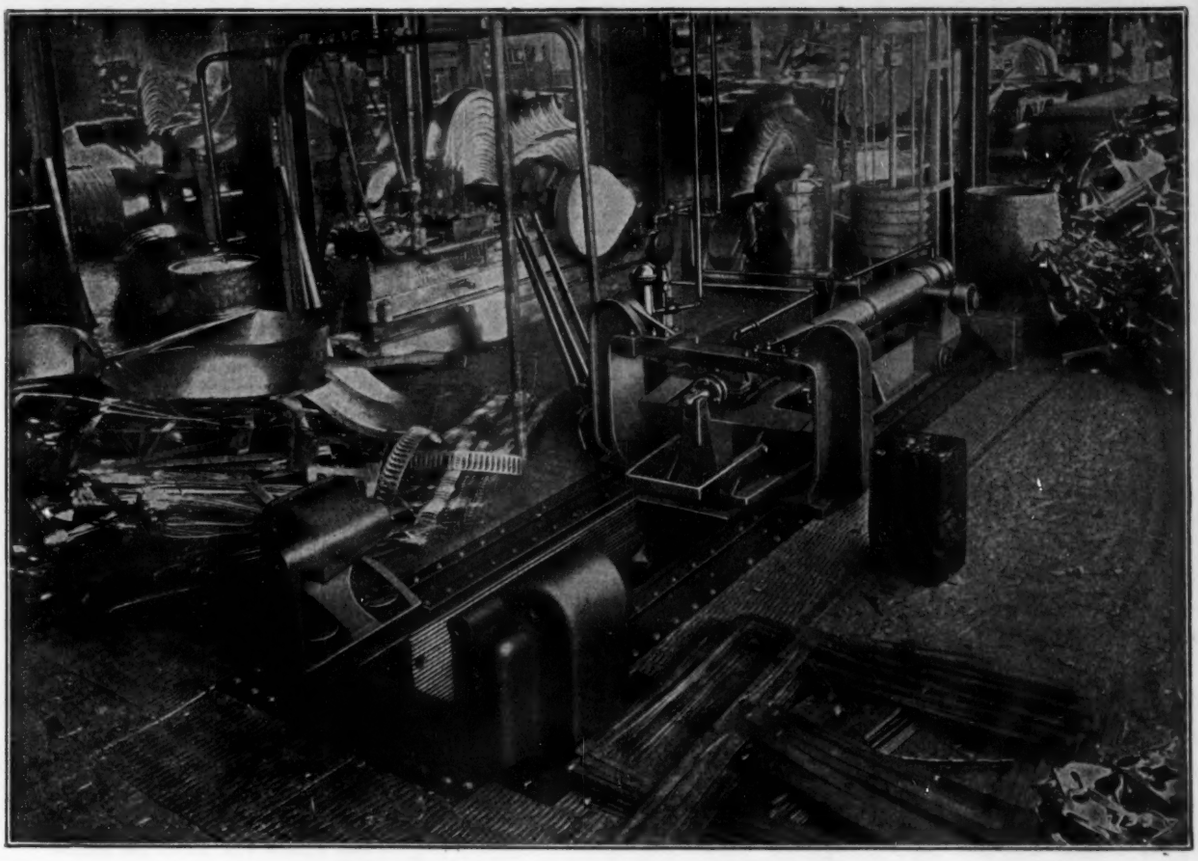
CENTRIFUGAL PUMPS—Dean Hill Pump Co., Anderson, Ind., has issued a bulletin featuring its multi-stage centrifugal pump, giving in detail each element of construction and illustrations of all parts and several installations. Tables of dimensions and other data are included.

NICKEL IN CASTINGS—International Nickel Co., New York, has issued two bulletins describing the beneficial effects obtained by addition of nickel and nickelchromium in gray cast iron. Illustrations show the method of using the ladle addition and photomicrographs indicate changes in the quality of metal.

SEAMLESS STEEL TUBES—Pittsburgh Steel Products Co., Pittsburgh, has issued four booklets featuring its tubes for mechanical, oil country, boiler tube and general purposes. In the latter the process of manufacture from bloom to finished product is described and illustrated and in the others the special features for the several purposes are covered.

TURRET LATHES—Warner & Swasey Co., Cleveland, has issued a bulletin describing a new type of turret lathe just put on the market, with detailed description and illustration of its various features, covered ways, 12 spindle speeds, 16 feed changes, improved carriage and saddle stops and rigid turret and turret binder. The various articles of equipment are given equally detailed description.

MALLEABLE CASTINGS—A new publication by the American Malleable Castings association, Cleveland, has been issued under the title "Certified Malleable Iron." It is one of the informative books issued by this association for the good of the industry and to spread the gospel of the better castings now being made. It is a complete and authoritative account of the origin, development, valuable properties, methods of manufacture and uses of malleable iron. It is illustrated profusely to supplement the text.



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

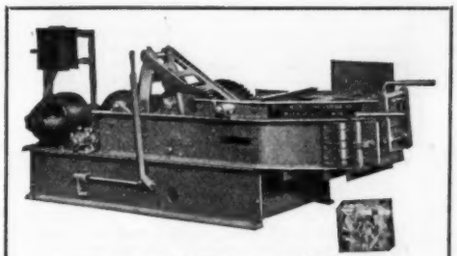
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot..... .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared wiht re-entrant angles)

Additional extra ..... .20c

LINK-BELT

"Built for Service"

ALL-PURPOSE CRAWLER

A UNIVERSAL machine, supplying its own tracks and propelling itself to the place where an opportunity for cheap and rapid handling of materials exists.

Operates with Lifting Magnet, Grab Bucket, Hook Block, Sling, etc. Easily converted to Dipper Shovel or Dragline.

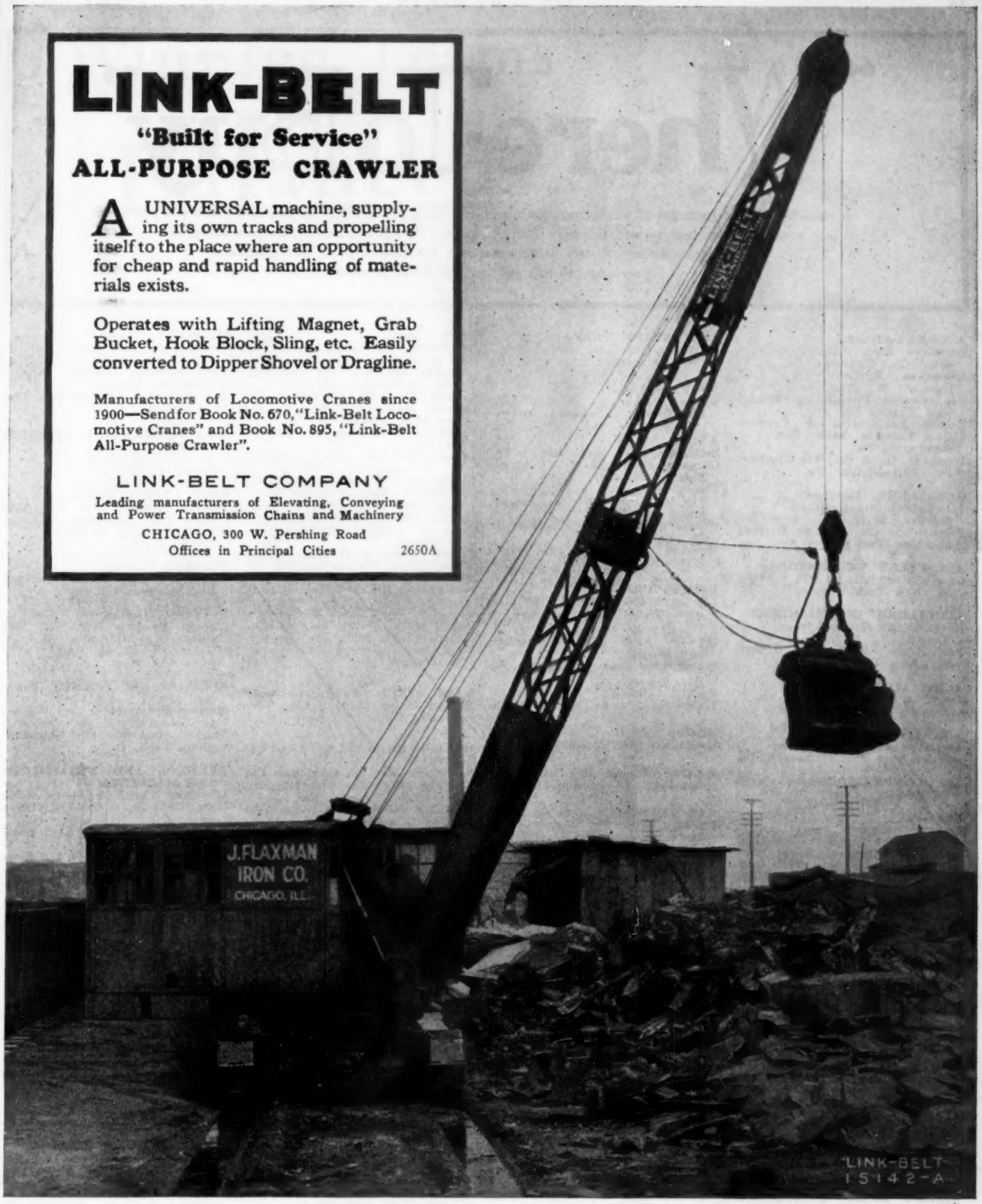
Manufacturers of Locomotive Cranes since 1900—Send for Book No. 670, "Link-Belt Locomotive Cranes" and Book No. 895, "Link-Belt All-Purpose Crawler".

LINK-BELT COMPANY

Leading manufacturers of Elevating, Conveying and Power Transmission Chains and Machinery

CHICAGO, 300 W. Pershing Road

Offices in Principal Cities 2650A



LINK-BELT

"Built for Service" Crawler

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

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Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Pennsylvania Engineering Works, New Castle, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Browne, deCourcy, Inc., 8 West 40th St., New York City.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, Ohio.

ANTI GLARE PREPARATION
Skybryte Co., The, Keith Bldg., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, Ohio.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

BARS (Alloy)
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BARS (Concrete Reinforcements)
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Truscon Steel Co., Youngstown, O.

BARS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The, Canton, Ohio.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.

BEARINGS (Ball)
Hoover Steel Ball Co., Ann Arbor, Mich.
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Hyatt Roller Bearing Co., Newark, N. J.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.

BEARINGS (Motor)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Hoover Steel Ball Co., Ann Arbor, Mich.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BELT CEMENT AND DRESSING (Leather)
Williams, I. B., & Sons, Dover, N. H.

BELT LACING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BELTING (Chain)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

BELTING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

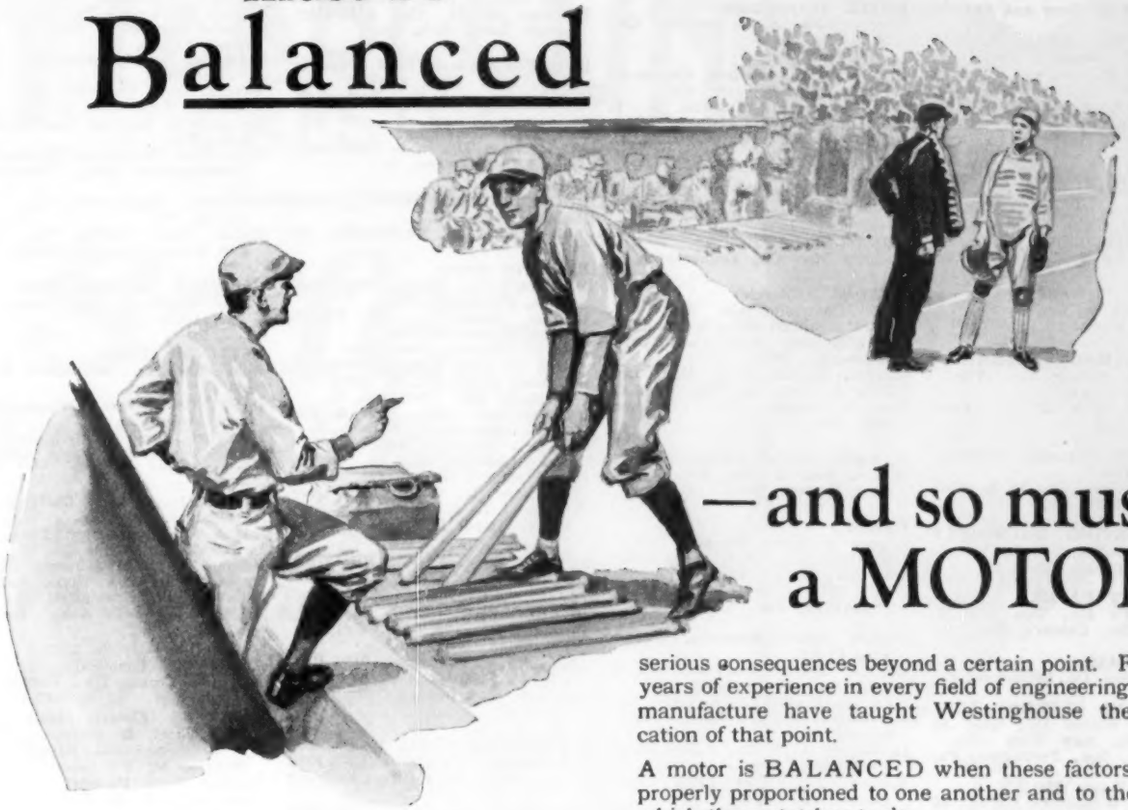
BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BILLETS AND BLOOMS
American Rolling Mill Co., Middletown, O.
American Tube & Stamping Co., The., Bridgeport, Conn.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., The, Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Wheeling Steel Corp., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Winning Teams must be Balanced



—and so must a MOTOR

YOU'VE known baseball teams that were strong on defense but couldn't hit when runs were needed. Such teams lack balance. To restore it, wise managers shake up the batting order, even at the sacrifice of defensive strength in the field.

Similarly, to give you a winning motor, a manufacturer must balance all the factors of its design to the particular conditions which it must meet. Below are factors that are combined in some proportion in every motor design. Each must be weighted with a view to the final result.

For instance, Power Factor: High power factor is desirable because the costs of generation and distribution increase as load power factor decreases. By reducing efficiency, power factor can be increased. Also by reducing air-gap (clearance between rotor and stator) power factor can be increased. Both have serious consequences beyond a certain point. Forty years of experience in every field of engineering and manufacture have taught Westinghouse the location of that point.

A motor is BALANCED when these factors are properly proportioned to one another and to the job which the motor has to do:

Electrical	Mechanical
1. Temperature	8. Air gap
2. Torques	9. Bearings
3. Efficiency	10. Shaft
4. Power Factor (in alternating-current motors)	11. Steel
5. Speed characteristics	12. Assembly
6. Insulation	13. Rotating smoothness
7. Commutation (in direct-current motors)	

To get true value in a motor look at *all* these characteristics, not merely at one or two.

In Westinghouse motors every factor has been weighted after years of experience extending into every industry and dating from the dawn of the motorizing idea. A truly balanced motor for every purpose is the result.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the United States and Foreign Countries

X88778

Westinghouse Motors are Balanced

BIN GATES (Blast Furnace)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

BLANKS (Rawhide Gear)
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.

BLANKS (Ring, Gear and Sprocket)
Akron-Selle Co., Akron, O.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

BLAST FURNACES—See FURNACES (Blast)

BLOWERS
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Spencer Turbine Co., Hartford, Conn.

BLOWERS (Pressure)
Spencer Turbine Co., Hartford, Conn.

BLOWERS (Rotary Positive)
Connellsville Blower Co., The, Connersville, Ind.
Roots, P. H. & F. M., Co., Connersville, Ind.

BLOW PIPES (Brazing, Welding, Cutting, Etc.)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

BLUE PRINTING MACHINERY
Pease, C. F., The, 853 N. Franklin St., Chicago, Ill.

BLUE PRINT PAPER
Pease, C. F., Co., The, 853 N. Franklin St., Chicago, Ill.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILERS AND SUPERHEATERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Sotter Bros., Inc., Pottstown, Pa.

BOILERS (Waste Heat)
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

BOILERS (Water Tube)
Babcock & Wilcox Co., The, 85 Liberty St., New York City.

BOILER TUBES — See TUBES (Boiler)

BOILER WALL COATING
Celite Products Co., 11 Broadway, New York City.

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.
National Machinery Co., Tiffin, O.

BOLT FORGING MACHINERY
Pawtucket Mfg. Co., Pawtucket, R. I.

BOLTS
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BOLTS (Heat Treated)
Bethlehem Steel Co., Bethlehem, Pa.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BOOKS (Technical)
Penton Publishing Co., Cleveland, O.

BORING MACHINES (Horizontal)
Universal Boring Machine Co., Hudson, Mass.

BOSH PLATES (Copper)
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

BOXES (Carbonizing)
Farrell-Cheek Steel Foundry Co., Sandusky, O.

BOXES (Open Hearth Charging)
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

BOXES (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BOXES (Tote)
Truscon Steel Co., Youngstown, O.

BRAKES (Electric)
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

BRAKES (Metal Forming)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

BRASS
Copper & Brass Research Ass'n., 25 Broadway, New York City.
Williams & Co., Inc., 915—937 Pennsylvania Ave., Pittsburgh, Pa.

BRICK (Silica, Magnesia, Chrome, Fire Clay)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Soisson, Jos., Fire Brick Co., Connellsville, Pa.
Stowe-Fuller Refractories Co., 1659 Union Trust Bldg., Cleveland, O.
U. S. Refractories Corp., Mt. Union, Pa.

BRICK INSULATING—See INSULATING BRICK

BRIDGE CRANES (Ore and Coal Handling)
McMyler-Interstate Co., The, Bedford, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

BRIDGES, BUILDINGS VIADUCTS, STACKS (Steel)
American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Eichleay, John, Jr., Co., S. 20th and Wharton, Pittsburgh, Pa.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Morgan Engrg. Co., The, Alliance, Ohio.
Mt. Vernon Bridge Co., Mt. Vernon, O.
Phoenix Bridge Co., 20 S. 15th St., Philadelphia, Pa.
Steel Plate Products Co., Pottstown, Pa.
Truscon Steel Co., Youngstown, O.

BRONZE (Centrifugally Cast)
Penn Mold & Mfg. Co., Wheeling Trust Bank Bldg., Wheeling, W. Va.

BRONZE (Corrosive Resisting)
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.

BRONZE (High Tensile)
Hills-McCanna Co., Elston Ave., Chicago, Ill.

BRONZE (Manganese)
Bethlehem Steel Co., Bethlehem, Pa.

BUCKETS (Clam Shell)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Brosius, Edgar E., 223 Fourth Ave., Pittsburgh, Pa.
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, Ohio.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

BUCKETS (Clam Shell, Orange Peel, Drag Line, Grab)
McMyler Interstate Co., Bedford, O.

BUCKETS (Dumping)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

BUCKETS (Elevator)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

BUCKETS (Grab)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Brosius, Edgar E., 223 Fourth Ave., Pittsburgh, Pa.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, O.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

BUILDINGS (Steel)—See BRIDGES, BUILDINGS AND VIADUCTS

BULLDOZERS
Beatty Machine & Mfg. Co., Hammond, Ind.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.

BURNERS (Acetylene) — See TORCHES AND BLOWERS (Acetylene, Blow, Oxyacetylene)

BURNERS (Blast Furnace and Coke Oven Gas)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

BURNERS (Fuel, Oil, Gas and Combination)
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.

BURNERS (Oil)
Best, W. N., Corp., 11 Broadway, New York City.
Hauck Mfg. Co., 114 Tenth St., Brooklyn, N. Y.

BY-PRODUCT PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

CAN MAKING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

CARBON BURNING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

CAR DUMPERS (Coal, Ore and Ash Handling Machinery)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
McMyler-Interstate Co., The, Bedford, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

CARS (Industrial and Mining)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.

CARS (Ingot and Open Hearth Charging)
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Pennsylvania Engineering Works, New Castle, Pa.

CASTINGS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

CASTINGS (Alloy Steel)
Alcumite Corp., The, Dayton, O.
Bethlehem Steel Co., Bethlehem, Pa.
Chicago Steel Foundry Co., Kedzie Ave. and 37th St., Chicago, Ill.
Cincinnati Steel Castings Co., The, Queen City & Spring Grove Aves., Cincinnati, O.
Electro-Alloys Co., The, Elyria, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Casting Co., Toledo, O.
Nugent Steel Castings Co., 31st & Wood Sts., Chicago, Ill.
Sivyer Steel Casting Co., Milwaukee, Wis.
Stroh Steel Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.

CASTINGS (Bessemer Iron)
Valley Mould & Iron Corp., Sharpsville, Pa.

CASTINGS (Brass)
Ohio Brass Co., Mansfield, O.

CASTINGS (Brass, Bronze, Copper, Aluminum)
Bethlehem Steel Co., Bethlehem, Pa.
Enterprise Brass Works, Muskegon, Mich.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.
Mesta Machine Co., Homestead, Pa.
Metal & Alloy Specialties Co., Inc., 1870 Elmwood Ave., Buffalo, N. Y.

CASTINGS (Chemical)
Alcumite Corp., The, Dayton, O.

CASTINGS (Electric Steel)
Acme Steel & Malleable Iron Works, Inc., 245 Military Rd., Buffalo, N. Y.
Chicago Steel Foundry Co., Kedzie Ave. & E. 37th St., Chicago, Ill.
Cincinnati Steel Castings Co., The, Queen City & Spring Grove Aves., Cincinnati, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Casting Co., Toledo, O.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Nugent Steel Castings Co., 31st & Wood Sts., Chicago, Ill.
Pittsburgh Electric Furnace Corp., P. O. Box 1125, Pittsburgh, Pa.
Racine Steel Castings Co., Racine, Wis.
Sivyer Steel Casting Co., Milwaukee, Wis.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

CASTINGS (Gray Iron)
Adamson Machine Co., The, Akron, O.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Cascade Foundry Co., 19th & Plum Sts., Erie, Pa.
Cyclops Foundry Co., 1503 Union Bank Bldg., Pittsburgh, Pa.
Forest City Foundry & Manufacturing Co., The, 1220 Main Ave., Cleveland, O.
Lake Shore Engine Works, Marquette, Mich.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Monessen Foundry & Machine Co., Monessen, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Pacific Foundry Co., Harrison & 18th Sts., San Francisco, Cal.
Pennsylvania Engineering Works, New Castle, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

IRVING PATENTED VIZABLEDG TRADE MARK REG. SAFSTEP

Safe—

Because It Has This

VISIBLE EDGE

Thousands of **"Irving Safsteps"** in use today prove the wide-spread approval of this original non-slipping open steel safety step as an important factor in industrial safety. And now the **"Vizabledg"** (visable edge) adds another big safety factor which makes the **"Safstep"** not only "slip-proof" but "miss-proof," as well.

By giving a "double crimp" to the reticuline bar next to the nosing bar, the edge of the **"Safstep"** is made to stand out unmistakably from the steps below. Furthermore, this gives an added "non-slip" quality at this critical point of the step.

Note particularly that the non-slipping **"Safstep"** surface is inherent in the step itself—not secured by mats or insets or nubs, that wear away. Time, wear, oil, grease, water, snow, will not make the **"Safstep"** slippery. And dirt, mud, snow, fall through—do not collect.

Write for Circular 4A-32, giving sizes, specifications and details.

IRVING IRON WORKS CO.
LONG ISLAND CITY, N.Y. U.S.A.
Established in 1902

IRVING SUBWAY TRADE MARK PATENTED REGISTERED
THE NON-SLIPPING OPEN STEEL FLOORING

IRVING SUBWAY TRADE MARK PATENTED REGISTERED
THE NON-SLIPPING OPEN STEEL FLOORING

CASTINGS (Gray Iron) Cont.
Quincy Stove Mfg. Co., The, Quincy, Ill.
Standard Engineering Co., Ellwood City, Pa.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Walworth Run Foundry Co., The, W. 27th & Nickel Plate R. R., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

CASTINGS (Heat Resistant)
Electro-Alloys Co., The, Elyria, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.

CASTINGS (Malleable)
Acme Steel & Malleable Iron Works, Inc., 245 Military Rd., Buffalo, N. Y.
American Malleable Castings Association, Union Trust Bldg., Cleveland, O.
Belle City Malleable Iron Co., Racine, Wis.
Berryhill Malleable Iron Co., Evansville, Ind.
Columbus Malleable Iron Co., Columbus, O.
Danville Malleable Iron Co., Danville, Ill.
Dayton Malleable Iron Co., Dayton, O.
Decatur Malleable Iron Co., Decatur, Ill.
Frazer & Jones Co., Syracuse, N. Y.
Haven Malleable Castings Co., The, Knowlton St., Cincinnati, O.
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Iowa Malleable Iron Co., Fairfield, Iowa
Kalamazoo Malleable Iron Co., Kalamazoo, Mich.
Lakeside Malleable Castings Co., Racine, Wis.
Link-Belt Co., P. O. Box 346, Indianapolis, Ind.
Marion Malleable Iron Works, Marion, Ind.
Moline Malleable Iron Co., St. Charles, Ill.
Newark Malleable Iron Works, Newark, N. J.
Northern Malleable Iron Co., St. Paul, Minn.
Northwestern Malleable Iron Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Peoria Malleable Castings Co., Peoria, Ill.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Rockford Malleable Iron Works, Rockford, Ill.
Ross-Meehan Foundries, Chattanooga, Tenn.
Temple Malleable Iron & Steel Co., Harrison Bldg., Philadelphia, Pa.
Vermillion Malleable Iron Co., Hoopeston, Ill.
Wisconsin Malleable Iron Co., Milwaukee, Wis.
Zanesville Malleable Co., Zanesville, O.

CASTINGS (Manganese Steel)
Morrison, J. S., Co., Inc., 528 Oliver Bldg., Pittsburgh, Pa.

CASTINGS (Monel Metal)
Pittsburgh Valve, Foundry & Construction Co., 26th & A. V. Ry., Pittsburgh, Pa.

CASTINGS (Nickel Chromium)
Chicago Steel Foundry Co., Kedzie Ave. at 37th St., Chicago, Ill.

CASTINGS (Semisteel)
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

CASTINGS (Steel)
Adamson Machine Co., The, Akron, Ohio.
Allegheny Steel Co., Brackenridge, Pa.
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.
American Steel Foundries, 410 No. Michigan Ave., Chicago, Ill.
Atlas Steel Casting Co., 1963 Elmwood Ave., Buffalo, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Chicago Steel Foundry Co., Kedzie Ave. at 37th St., Chicago, Ill.
Columbia Steel Corp., Balfour Bldg., San Francisco, Cal.
Commercial Steel Castings Co., The, Marion, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Deemer Steel Casting Co., 9th and Washington Ave., New Castle, Del.
Era Steel Co., The, Bucyrus, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, Ohio.
Federal Steel Foundry Co., Chester, Pa.
Industrial Steel Casting Co., Toledo, O.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Mesta Machine Co., Homestead, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Nugent Steel Castings Co., 31st & Wood Sts., Chicago, Ill.
Racine Steel Castings Co., Racine, Wis.
Reliance Steel Casting Co., 28th and Smallman Sts., Pittsburgh, Pa.
Ross-Meehan Foundries, Chattanooga, Tenn.
Sharon Foundry Co., Sharon, Pa.
Sivyer Steel Casting Co., Milwaukee, Wis.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Stroh Steel Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.
Strong Steel Foundry Co. 33 Norris St., Buffalo, N. Y.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

CASTORS (Plate Mill)—See PLATE CASTORS

CEMENT (High-Temperature)
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

CEMENT (Silica and Chrome)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.

CEMENT MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

CENTRAL STATION EQUIPMENT
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

CHAIN DRIVES
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CHAINS (Crane & Hoist)
American Chain Co., Bridgeport, Conn.

CHAINS FOR ALL PURPOSES
American Chain Co., Bridgeport, Conn.

CHAINS (Power Transmission)
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CHANNELS—See STEEL (Structural)

CHAPLETS
Erdle Perforating Co., 171 York St., Rochester, N. Y.

CHARCOAL
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.

CHARGING MACHINES (Cupola)
Roots, P. H. & F. M., Co., Connersville, Ind.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

CHEMICALS
American Chemical Paint Co., Ambler, Pa.
Ford, J. B., Co., The, Wyandotte, Mich.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.

CHISEL BLANKS
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.
Marchant, George F., Co., 1434 S. Rockwell St., Chicago, Ill.

CHROME PLATING
Chemical Treatment Co., 26 Broadway, New York City.

CHROME VANADIUM
Allen, Edgar, Steel Co., Inc., 718-722 W. Lake St., Chicago, Ill.

CHROMIUM METAL
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

CHUCKS (Lathe)
Whiton, D. E., Machine Co., New London, Conn.

CLEANERS (Metal)—See METAL CLEANERS

CLEANING COMPOUNDS (Automobile Body)
Industrial Chemical Products Corp., 3200 Woodbridge St., Detroit, Mich.

CLEANING SPECIALTIES
American Chemical Paint Co., Ambler, Pa.
Ford, J. B., Co., The, Wyandotte, Mich.

CLUTCHES
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CLUTCHES (Cut-Off Coupling)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

CLUTCHES (Friction)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Ave., Chicago, Ill.

COAL AND COKE
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Hanna, The M. A., Co., Leader-News Bldg., Cleveland, O.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
Park & Williams, Real Estate Trust Bldg., Philadelphia, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Pilling & Co., Inc., 1500 Chestnut St., Philadelphia, Pa.
Pittsburgh Coal Co., Oliver Bldg., Pittsburgh, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Snyder, W. P., Co., Oliver Bldg., Pittsburgh, Pa.
St. Louis Coke & Iron Co., 208 S. LaSalle St., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.

COAL CRUSHERS AND PULVERIZERS
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.

COAL, ORE AND ASH HANDLING MACHINERY
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
Orton Crane & Shovel Co., 608 So. Dearborn St., Chicago, Ill.
Webster Mfg. Co., 4500 Cortland St., Chicago, Ill.

COKE—See COAL AND COKE

COKE OVEN MACHINERY
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Pennsylvania Engineering Works, New Castle, Pa.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

COKE OVENS (By-Product)
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

COLD STRIP MACHINERY
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Spencer Turbine Co., Hartford, Conn.

COMPRESSORS (Portable)
Ingersoll-Rand Co., 11 Broadway, New York City.

CONCRETE ARMORING (Surface)
Irving Iron Works, Long Island City, N. Y.

CONCRETE INSERTS
Dayton Malleable Iron Co., Dayton, O.

CONCRETE MIXERS—See MIXERS (Concrete)

CONCRETE REINFORCING BARS—See BARS (Concrete Reinforcing)

CONDENSERS (Surface, Barometric, Multi-Jet)
Ingersoll-Rand Co., 11 Broadway, New York City.

CONDUITS (Electric)
Youngstown Sheet & Tube Co., Youngstown, O.

CONTRACTORS—See ENGINEERS AND CONTRACTORS

CONTROLLERS (Electric)
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

CONVEYORS (Belt)
Webster Mfg. Co., The, 4500 Cortland St., Chicago, Ill.

CONVEYORS (Elevating and Conveying)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CONVEYORS (Portable)
Mackintosh Engineering Co., Schofield Bldg., Cleveland, O.

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FEDERAL PRESS CO., ELKHART, IND.

FEDERAL

POWER PUNCH PRESSES

For all kinds of sheet metal stampings. Federal presses are of such sturdy design and are so carefully built and tested, that unusual freedom from repairs is assured.

Circular on request.

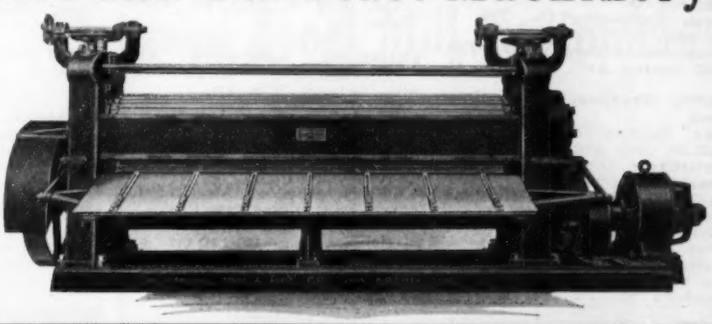
FEDERAL PRESS CO., ELKHART, IND.

"STAMCO" Sheet and Tin Plate Machinery

"Stamco" Interchangeable Die Type Roll Corrugating Machine.

Simple in construction and adjustment and by far the fastest machine of its kind. Bu lt for severe service. *Write for details.*

Power Shears, Corrugating Rolls, Roofing Machinery, Bending Presses.



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Detroit Office:
Room 3—250 General Motors Bldg.

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COOLING BEDS
Morgan Construction Co., Worcester, Mass.

COPPER
Copper & Brass Research Ass'n., 25 Broadway, New York City.

COPPER AND BRASS DRAWING MACHINERY
Vaughn Machinery Co., The, Cuyahoga Falls, O.

CORE MAKING MACHINES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.

CORE OVENS
Holcroft & Co., 6545 Epworth Blvd., Detroit, Mich.

CORRUGATING AND CRIMPING MACHINES (Cold Rolled)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

COTTER PINS
Hindley Mfg. Co., John St., Valley Falls, R. I.

COUNTING MACHINES
Veeder Mfg. Co., Hartford, Conn.

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COUPLINGS (Flexible)
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Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Farrel Foundry & Machine Co., Buffalo, N. Y.
James, D. O., Mfg. Co., 1120 W. Monroe St., Chicago, Ill

CRANES
Bedford Foundry & Machine Co., Bedford, Ind.
Cyclops Iron Works, 837 Folsom St., San Francisco, Cal.
Payne, N. B., & Co., 25 Church St., New York City.
Whiting Corp., Harvey, Ill.

CRANES (Charging)
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Morgan Engineering Co., The, Alliance, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

CRANES (Crawling, Tractor, Erection)
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Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
McMyler-Interstate Co., Bedford, O.
Marion Steam Shovel Co., The, Marion, Ohio.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago. Ill.

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Box, Alfred, Co., Janney & E. Ontario Sts., Philadelphia, Pa.
Cleveland Crane & Engr. Co., The, Wickliffe, O.
Erie Steel Construction Co., The, Erie, Pa.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Milwaukee Elec. Crane & Mfg. Corp., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.
Whiting Corporation, Harvey, Ill.

CRANES (Gantry)
Bedford Foundry & Machine Co., Bedford, Ind.
Whiting Corporation, Harvey, Ill.

CRANES (Hand)
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Reading Chain & Block Corp., Reading, Pa.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Whiting Corporation, Harvey, Ill.

CRANES (Hydraulic)
Alliance Machine Co., The, Alliance, O.

CRANES (Industrial)
Cleveland Electric Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

CRANES (Jib)
Niles-Bement-Pond Co., 111 Broadway, New York City.

CRANES (Locomotive)
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, O.
Harnischfeger Corp., 38th and National, Milwaukee, Wis.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
McMyler Interstate Co., Bedford, O.
Marion Steam Shovel Co., The, Marion, O.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.

CRANES (Motor Truck)
Browning Crane Co., 162nd and Waterloo Rd., Cleveland, O.

CRANES (Portable)
Beatty Machine & Mfg. Co., Hammond, Ind.

CRANES (Wall)
Milwaukee Electric Crane & Mfg. Corp., Milwaukee, Wis.
Niles-Bement-Pond Co., 111 Broadway, New York City.

CRANK SHAFTS
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, O.

CRUSHING, GRINDING AND PULVERIZING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.

CUPRO-VANADIUM
Vanadium Corp. of America, 120 Broadway, New York City.

CUTTING AND WELDING APPARATUS—See WELDING AND CUTTING APPARATUS (Electric)

CUTTING AND WELDING (Oxy-Acetylene Process)—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

CYLINDERS (Acetylene) — See ACETYLENE IN CYLINDERS

CYLINDERS (Oxygen) — See OXYGEN IN CYLINDERS

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECARBONIZING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

DEOXIDIZERS
Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.

DERRICKS
American Terry Derrick Co., So. Kearney, N. J.

DIE BLOCKS
Bethlehem Steel Co., Bethlehem, Pa.
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

DIE CUSHIONS (Pneumatic)
Marquette Tool & Mfg. Co., The, 319 W. Ohio St., Chicago, Ill.

DIE HEADS (Automatic)
Landis Machine Co., Waynesboro, Pa.

DIE HEADS (Self Opening)
Rickert-Shafer Co., Dept. T. M., Erie, Pa.

DIE MAKERS ACCESSORIES
Danly Machine Specialties, Inc., 4915 N. Lincoln Ave., Chicago, Ill.

DIE SETS
U. S. Tool Co., Inc., Ampere N. J.

DIE SHOES
U. S. Tool Co., Inc., Ampere, N. J.

DIES
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Toledo Machine & Tool Co., Toledo, O.
Vanadium Corp. of America, 120 Broadway, New York City.

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Marchant, George F., Co., 1434 So. Rockwell St., Chicago, Ill.

DOORS AND SHUTTERS (Steel, Fire and Rolling)
Kinnear Mfg. Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

DRAFTING ROOM EQUIPMENT
Pease, The C. F., Co., 853 N. Franklin St., Chicago, Ill.

DRAW BENCHES
Standard Engineering Co., Ellwood City, Pa.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

DRAWING INSTRUMENTS AND DRAWING MATERIALS
Pease, The C. F., Co., 853 N. Franklin St., Chicago, Ill.

DRILLING MACHINES (Automatic)
Barnes Drill Co., Rockford, Ill.

DRILLING MACHINES (Vertical and Gang)
Barnes Drill Co., Rockford, Ill.
Rockford Machine Tool Co., 2400 Kishwaukee Ave., Rockford, Ill.

DRILLS (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

DRILLS (Rock)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Ingersoll-Rand Co., 11 Broadway, New York City.

DRIVES (Cut Herringbone Gears)
Farrel Foundry & Machine Co., Buffalo, N. Y.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

DRIVES (Gear, Rope)
Mesta Machine Co., Homestead, Pa.

DRYERS (Sand, Coal, Ores, Chemical, Etc.)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

DUST ARRESTERS
Pangborn Corp., P. O. Box 858, Hagerstown, Md.

ELECTRICAL EQUIPMENT
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

ELECTRIC HEATING APPARATUS
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

ELECTRIC TOOLS (Portable)—See TOOLS (Portable Electric)

ELEVATING AND CONVEYING MACHINERY—See CONVEYORS (Elevating and Conveying)

ELEVATORS (Bucket)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

ENGINE LATHES—See LATHES (Engine)

ENGINES (Gas, Oil)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Ingersoll-Rand Co., 11 Broadway, New York City.

ENGINES (Heavy Duty)
Mesta Machine Co., Homestead, Pa.

ENGINEERS AND CONTRACTORS
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Chapman Engineering Co., Mt. Vernon, O.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Freyn Engineering Co., 310 So. Michigan Ave., Chicago, Ill.
Industrial Maintenance Bureau, 331 Fourth Ave., Pittsburgh, Pa.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
Laughlin, Alex, & Co., First National Bank Bldg., Pittsburgh, Pa.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Moore, W. E., & Co., Union Bank Bldg, Pittsburgh, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Phoenix Bridge Co., 20 South 15th St., Philadelphia, Pa.
Pittsburgh Valve, Fdry. & Construction Co., 26th & A. V. Ry., Pittsburgh, Pa.
Smythe, S. R., Co, The, House Bldg, Pittsburgh, Pa.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Swindell, Wm., & Bros., P. O. Box 1753, Pittsburgh, Pa

ENGINEERS (Consulting)
American Heat Economy Bureau, 926 Wabash Bldg., Pittsburgh, Pa.
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Ellis, Frank I., 2127 Farmers Bank Bldg., Pittsburgh, Pa.
Freyn Engineering Co., 310 So. Michigan Ave., Chicago, Ill.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Monroe, W. K., Co., 1836 Euclid Ave., Cleveland, O.
Moore, W. E., & Co., Union Bank Bldg, Pittsburgh, Pa.
Perin & Marshall, 40 West 40th St., New York City.
Shover, Barton R., 424 Oliver Bldg., Pittsburgh, Pa.

ENGINEERS, CONSULTING (By-Product Coke Oven and Gas Plants)
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

EXHAUSTERS (Gas)—See GAS EXHAUSTERS

FACTORY EQUIPMENT (Steel)—See STOOLS AND FACTORY EQUIPMENT (Steel)

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Easy to operate
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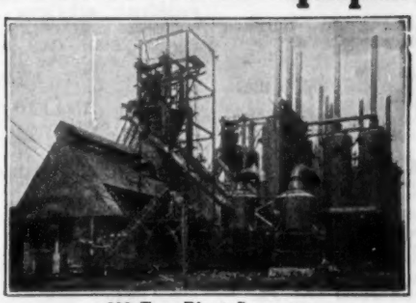

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Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Keokuk Electro-Metals Co., Keokuk, Iowa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Leavitt, C. W., & Co, 30 Church St, New York City.
Metal & Thermit Corp., 120 Broadway, New York City.

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Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
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Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.
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Keokuk Electro-Metals Co., Keokuk, Iowa.
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Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

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Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Vanadium Corp. of America, 120 Broadway, New York City.

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Brighton Fire Brick Co., Block House Run, New Brighton, Pa.
Climax Fire Brick Co., Climax, Pa.
Crescent Refractories Co., Curwensville, Clearfield Co., Pa.
Dover Fire Brick Co., 1012 Nat'l City Bank Bldg., Cleveland, O.
Eureka Fire Brick Works, First National Bank Bldg., Pittsburgh, Pa.
France, J. H., Refractories Co., Snow Shoe, Pa.
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Haws Refractories Co., Johnstown, Pa.
Hydraulic Press Brick Co., Central National Bank Bldg., St. Louis, Mo.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede Christy Clay Products Co., St. Louis, Mo.
Portsmouth Refractories Co., Portsmouth, O.
Queen's Run Refractories Co., Inc., Lock Haven, Pa.
Stowe-Fuller Refractories Co., The, 1650 Union Trust Bldg., Cleveland, O.
Superior Basic Brick Co., 517 Bessemer Bldg., Pittsburgh, Pa.
Union Mining Co., 1113 Fidelity Bldg., Baltimore, Md.
U. S. Refractories Corp., Mt. Union, Pa.
Walsh Fire Clay Products Co., 4070 N. Main St., St. Louis, Mo.

FIRE CLAY (Ground)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.
U. S. Refractories Corp., Mt. Union, Pa.

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Kinnear Mfg. Co., The, 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

FLANGES (Pipe)
Dart, E. M., Mfg. Co., Providence, R. I.

FLANGES (Pipe, Forged Steel)
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.

FLASKS (Foundry)
Truscon Steel Co., Youngstown, O.

FLASKS (Snap)
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Diamond Clamp & Flask Co., Richmond, Ind.

FLOORING (Steel, Ventilating, Nonslipping, Fireproof)
Kerlow Steel Flooring Co., 232 Culver Ave., Jersey City, N. J.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.

FLOOR PLATES (Rolled Steel)—See PLATES (Rolled Steel—Floor)

FLUORSPAR
Lavino, E. J. & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

FLUX (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

FORGES
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.

FORGING BILLETS
Andrews Steel Co., Newport, Ky.
Central Steel Co., Massillon, O.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

FORGING BILLETS (Alloy and Carbon Steel)
Central Steel Co., Massillon, O.

FORGING FURNACES
Best, W. N., Corp., 11 Broadway, New York City.
Chapman-Stein Furnace Co., Mt. Vernon, Ohio.

FORGING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.
National Machinery Co., The, Tiffin, O.

FORGINGS (Brass, Bronze and Copper)
American Brass Co., 25 Broadway, New York City.
Chicago Forging & Mfg. Co., 2004 Southport Ave., Chicago, Ill.

FORGINGS (Drop)
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Canton Forge & Axle Co., 2003-35 Deuber Ave., Canton, O.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland, O.
Columbus Forge & Iron Co., Columbus, O.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Eagle Bolt & Forging Co., The, 1435 E. 45th St., Cleveland, O.
Eccles, Richard Co., Auburn, N. Y.
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Kropp Forge Co., 5301 W. Roosevelt Rd., Chicago, Ill.
Oliver Iron & Steel Corp., So. 10th & Muriel Sts., Pittsburgh, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Queen City Forging Co., The, 235 Tennyson St., Cincinnati, O.
Rockford Drop Forge Co., Rockford, Ill.
Scranton Forging Co., Scranton, Pa.
Strieby & Foote Co., 301 Ogden St., Newark, N. J.
Wilcox, D., Mfg. Co., Mechanicsburg, Pa.

FORGINGS (Iron and Steel)
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Canton Forge & Axle Co., 2003-35 Deuber Ave., Canton, O.
Columbus Forge & Iron Co., Columbus, O.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Eccles, Richard, Co., Auburn, N. Y.
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Kropp Forge Co., 5301 W. Roosevelt Rd., Chicago, Ill.
Leard, Wm., Co., The, New Brighton, Pa.
McMyler-Interstate Co., Bedford, O.
Mesta Machine Co., Homestead, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Rockford Drop Forge Co., Rockford, Ill.
Tioga Steel & Iron Co., 52nd & Grays Ave., Philadelphia, Pa.
Vanadium Corp. of America, 120 Broadway, New York City.
Wilcox, D., Mfg. Co., Mechanicsburg, Pa.

FOUNDRY EQUIPMENT AND SUPPLIES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.
Whiting Corp., Harvey, Ill.

FRAMES (Wire Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

FROGS AND SWITCHES
Bethlehem Steel Co., Bethlehem, Pa.

FUEL OIL BURNING SYSTEMS AND PLANTS
Best, W. N. Corp., 11 Broadway, New York City.
Fuller-Lehigh Co., Fullerton, Pa.

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Armstrong Cork & Insulation Co., 101 24th St., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

FURNACE LININGS
Ashland Fire Brick Co., Ashland, Ky.

FURNACES (Annealing, Case Hardening and Heat Treating)
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Chapman-Stein Furnace Co., Mt. Vernon, O.
Combustion Engineering Corp., 43 Broad St., New York City.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Electric Furnace Co., The, 538 Wilson St., Salem, O.
Hagan, George J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Holcroft & Co., 6645 Epworth Blvd., Detroit, Mich.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.

FURNACES (Blast)
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Mt. Vernon Bridge Co., Mt. Vernon, O.
Pennsylvania Engineering Works, New Castle, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.

FURNACES (Electric)
Hagan, George J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.
Swindell, Wm., & Brothers Co., P. O. Box 1753, Pittsburgh, Pa.

FURNACES (Electric for Nonferrous Metals)
Electric Furnace Co., The, 538 Wilson St., Salem, O.

FURNACES (Electric Melting)
American Bridge Co., 71 Broadway, New York City.
Electric Furnace Co., The, 538 Wilson St., Salem, O.
General Electric Co., Schenectady, N. Y.
Hagan, George J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Payne, N. B., & Co., 25 Church St., New York City.
Pittsburgh Electric Furnace Co., 32nd St. and Putney Way, Pittsburgh, Pa.

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Chapman-Stein Furnace Co., Mt. Vernon, O.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.
Laughlin, Alex., & Co., First National Bank Bldg., Pittsburgh, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Smythe, S. R., Co., Oliver Bldg., Pittsburgh, Pa.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

FURNACES (Recuperative)
Combustion Engineering Corp., 43 Broad St., New York City.
Electric Furnace Co., The, 538 Wilson St., Salem, O.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.

FURNACES (Sheet and Tin Mill)
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.

GAGES (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GAGGERS
Franklin Core Rod & Gagger Co., Franklin, Pa.

GALVANIZING
Cattie Brothers Corp., Tioga St., Philadelphia, Pa.
Cattie, Joseph P., & Brothers, Gaul & Letterly Sts., Philadelphia, Pa.
Hanlon-Gregory Galvanizing Co., 5515 Butler St., Pittsburgh, Pa.

GALVANIZING (Hot Dip)
Cattie, Joseph P., & Brothers, Gaul & Letterly Sts., Philadelphia, Pa.
Gray-Gregory Galvanizing Co., 220 Larkin St., Buffalo, N. Y.
Hanlon-Gregory Galvanizing Co., 5515 Butler St., Pittsburgh, Pa.

GALVANIZING PLANTS (For Sheets)
Erie Foundry Co., Erie, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

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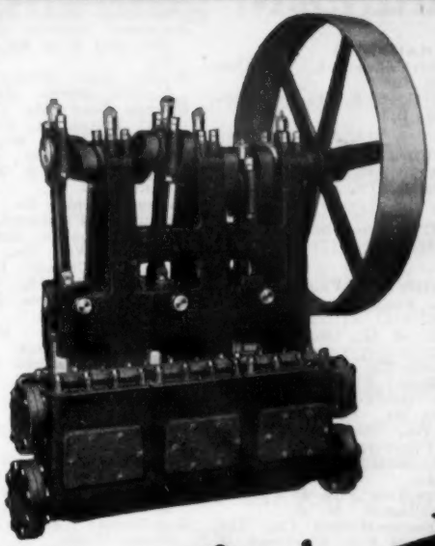
Dependable Factory Water Supply

SOMETIME you may be confronted with the responsibility of investing your company's money in water supply equipment. When that time comes, shift the responsibility on to Deming Pumps. They will justify your judgment.

Illustrated at the right is one member (Figure 48) of a complete family of Deming Power Pumps of all types, sizes and capacities. Figure 48 is a single-acting Triplex Plunger Pump especially designed for pumping into open or compression tanks. The unusually large valve area of this pump permits it to operate at much higher speeds than the usual geared pump, resulting in greater capacity for the space occupied.

Send for catalog of complete information about this and many other power pumps in the complete Deming line.

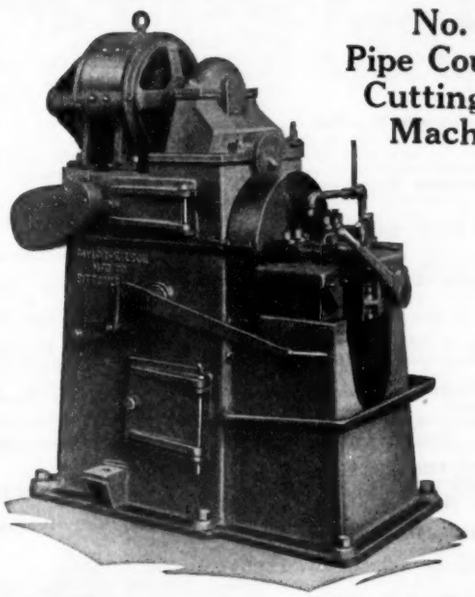


THE DEMING COMPANY
Est. 1880, Salem, Ohio

Distributors and Dealers Everywhere for Prompt and Efficient Service

Deming PUMPS

No. 2 Pipe Coupling Cutting-Off Machine



PIPE MILL MACHINERY

Easily Operated
Accurate
Rapid

Taylor-Wilson Pipe Mill Machinery is the result of thirty years of experience in the manufacture and development of pipe threading machinery, and its service shows it. We shall gladly send full details.

TAYLOR-WILSON MFG. CO
ENGINEERS—FOUNDERS—MACHINISTS
MAIN OFFICE AND WORKS McKEES ROCKS, PA.
(Pittsburgh District)

MORTON Draw-Cut Shapers
make Deep and Rapid Cuts

The draw-cut shaper removes metal as fast and as accurately as a planer. It consumes one-third less power than a planer and takes only half as much floor space. Owing to the fact that the shaper tool is carried on a ram, it can work on a great many pieces that the planer tool cannot reach at all.

The Morton 36" Heavy Duty Draw-Cut Shaper has ample power for taking deep and rapid cuts at all times. Its service is your guarantee of a substantial saving in time, labor and expense.

Illustrated in Bulletin No. 3 H

Morton Mfg. Co.
Muskegon Heights, Michigan

GAS (Welding and Cutting)
Prest-O-Lite Co., Inc., The, 30 E. 42nd St., New York City.

GAS BOOSTERS (Rotary Positive Pressure)
Connersville Blower Co., The, Connersville, Ind.
Roots, P. H. & F. M., Co., Connersville, Ind.

GAS EXHAUSTERS
Connersville Blower Co., The, Connersville, Ind.
Roots, P. H. & F. M., Co., Connersville, Ind.

GAS HOLDERS
Pennsylvania Engineering Works, New Castle, Pa.

GAS METERS — See METERS (Gas, Air)

GAS PRODUCER PLANTS
Chapman Engineering Co., Mt. Vernon, O.
Cooper, C. & G., Co., Mt. Vernon, O.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Flinn & Dreffein Co., 435 S. Dearborn St., Chicago, Ill.
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.
Wood, R. D., & Co., 400 Chestnut Ave., Philadelphia, Pa.

GAS RECOVERY COKE OVEN AND GAS PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

GEAR BLANKS
Bethlehem Steel Co., Bethlehem, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

GEAR GENERATORS
Farrel Foundry & Machine Co., Buffalo, N. Y.

GEARS (Bakelite)
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

GEARS (Bevel-Generated Tooth)
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

GEARS (Herringbone)
Farrel Foundry & Machine Co., Buffalo, N. Y.
Fawcus Machine Co., 2818 Smallman St., Pittsburgh, Pa.

GEARS (Machine Molded)
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Ave., Chicago, Ill.
Taylor-Wilson Manufacturing Co., McKees Rocks, Pa.

GEARS (Miter, Ring, Spiral, Worm)
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Chicago Gear Mfg. Co., 2827 Fulton St., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.

GEARS (Rawhide)
Akron Gear & Eng. Co., The, Akron, O.
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.

GEARS (Reverse Marine)
General Electric Co., Schenectady, N. Y.
Johnson, Carlyle, Machine Co., Manchester, Conn.

GEARS AND GEAR CUTTING
Akron Gear & Eng. Co., The, Akron, O.
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
American Adamite Co., The, 12th and Etna Sts., Pittsburgh, Pa.
Boston Gear Works Sales Co., Norfolk Downs, Mass.
Chicago Gear Mfg. Co., 2827 Fulton St., Chicago, Ill.
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.
Farrel Foundry & Machine Co., Buffalo, N. Y.
Fawcus Machine Co., 2818 Smallman St., Pittsburgh, Pa.
Ferguson Gear Co., Gastonia, N. C.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
James, D. O., Mfg. Co. 1120 W. Monroe St., Chicago, Ill.
Johnson, Carlyle, Machine Co., Manchester, Conn.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.
Ross-Meehan Foundries, Chattanooga, Tenn.
Stroh Steel-Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.
Simonds Mfg. Co., 25th St. and Liberty Ave., Pittsburgh, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

GENERATING SETS
General Electric Co., Schenectady, N. Y.

GENERATORS (Acetylene) — See ACETYLENE GENERATORS

GENERATORS (Direct and Alternating Current)
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GLASS CLEANERS (Liquid and Powder)
Skybryte Co., The, Keith Bldg., Cleveland, O.

GLOVES (Asbestos)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GLOVES (Steel Grip)
Industrial Gloves Corp., 1213 Fullerton Ave., Chicago, Ill.

GOGGLES (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GRATING-STEEL (Subway, Area, Sidewalk, Ventilation, Non-Slipping)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.
Kerlow Steel Flooring Co., 232 Culver Ave., Jersey City, N. J.

GRILLES
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

GRINDERS (Crankshaft)
Landis Tool Co., Waynesboro, Pa.

GRINDERS (Electric-Pneumatic-Portable)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

GRINDERS (Roll)
Landis Tool Co., Waynesboro, Pa.

GRINDING COMPOUNDS
Zip Abrasive Co., The, 6007 Euclid Ave., Cleveland, O.

GRINDING MACHINES
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Landis Tool Co., Waynesboro, Pa.

GRINDING PANS
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.
Phillips & McLaren Co., 24th & Smallman Sts., Pittsburgh, Pa.

GUARDS (Truck Radiator)
Irving Iron Works, Long Island City, N. Y.

GUARDS (Machinery)
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, O.

HAMMERS (Blacksmith)
Blacker Engineering Corp., Grand Central Terminal, New York City.

HAMMERS (Board Drop)
Erie Foundry Co., Erie, Pa.

HAMMERS (Chipping, Riveting and Calking)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

HAMMERS (Drop)
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Erie Foundry Co., Erie, Pa.
Moloch Co., The, Kaukauna, Wis.
Morgan Engineering Co., The, Alliance, Ohio.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Toledo Machine & Tool Co., Toledo, O.

HAMMERS (Power)
Blacker Engineering Corp., Grand Central Terminal, New York City.
Bradley, C. C., & Son, Inc., 432 No. Franklin St., Syracuse, N. Y.
Erie Foundry Co., Erie, Pa.
Moloch Co., The, Kaukauna, Wis.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

HAMMERS (Rawhide)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

HAMMERS (Steam)
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., The, Alliance, O.

HANGERS (Door)
Myers, F. E., & Brothers Co., The, Ashland, Ohio.

HANGERS (Shaft)
Hyatt Roller Bearing Co., Newark, N. J.

HARDNESS TESTING MACHINES
Shore Instrument & Mfg. Co., Van Wyck Ave. & Carll St., Jamaica, N. Y.

HARDWARE
Chicago Forging & Mfg. Co., 2004 Southport Ave., Chicago, Ill.

HARDWOOD (Northern Wisconsin & Michigan)
Northern Hemlock & Hardwood Mfgrs. Assoc., Oshkosh, Wis.

HEAT TREATING PROCESS MALLEABLE IRON
Ohio Brass Co., Mansfield, O.

HEAT TREATING (Commercial)
Lakeside Steel Improvement Co., The, 5418 Lakeside Ave., Cleveland, Ohio.
Rockwell, The Stanley P., Co., 66 Trumbull St., Hartford, Conn.

HOISTING MACHINERY
American Terry Derrick Co., So. Kearney, N. J.
Beebe Bros., 3223 First Ave., So. Seattle, Wash.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, Ohio.
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
McMyler-Interstate Co., Bedford, O.
Marion Steam Shovel Co., The, Marion, Ohio.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.
Treadwell Engineering Co., Easton, Pa.

HOISTS (Electric)
Box, Alfred, Co., Janney & Ontario Sts., Philadelphia, Pa.
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.
General Electric Co., Schenectady, N. Y.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
Milwaukee Electric Crane & Mfg. Corp., Milwaukee, Wis.
Reading Chain & Block Corp., Reading, Pa.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

HOISTS (Pneumatic)
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.

HOOPS AND BANDS
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
American Tube & Stamping Co., The, Bridgeport, Conn.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh, Pa.

HOOPS AND BANDS (Strips)
Sharon Steel Hoop Co., Sharon, Pa.

HOSE (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

HOT BEDS
McKee, Willis, 2422 Euclid Ave., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

HOT BLAST STOVES
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.

HYDRANTS (Fire)
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

HYDRAULIC MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Chambersburg Engineering Co., Chambersburg, Pa.
Morgan Engineering Co., The, Alliance, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

HYDRAULIC PRESSES — See PRESSES (Hydraulic)

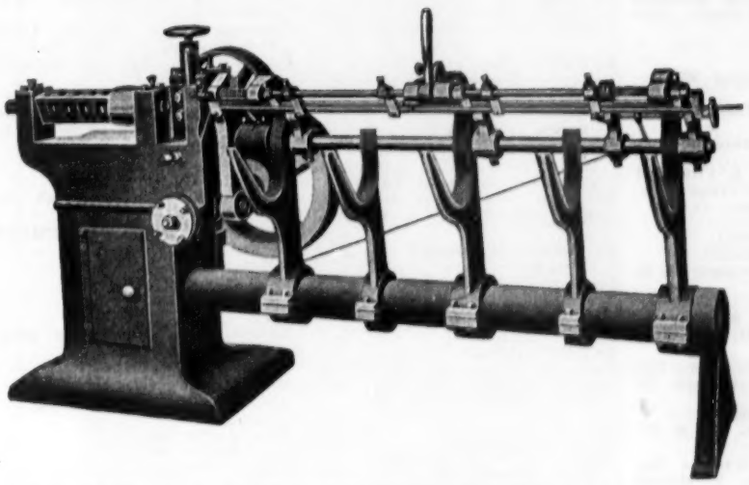
INDUSTRIAL HAULAGE EQUIPMENT
General Electric Co., Schenectady, N. Y.

INGOT MOLDS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Penn Mold & Mfg. Co., Wheeling, W. Va.
Valley Mould & Iron Corp., Sharpsville, Pa.
Vulcan Mold & Iron Co., Latrobe, Pa.

INSTRUMENTS (Electric, Indicating and Recording)
General Electric Co., Schenectady, N. Y.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

SHUSTER Wire Cutting and Straightening Machinery



The daily production capacity of a "Shuster" is enormous. Every wire is perfectly straightened and accurately cut. Operating cost is extremely low and in a great many installations one unskilled laborer tends a whole group of Shuster machines. The amazing economy of the Shuster, coupled with its extreme long life and freedom from repairs make it foremost in the minds of executives for any wire handling job.

Our Book on Wire Straightening and Cutting Machinery is brimful of facts and photographs showing the production economy of Shuster Machines.

You will find it very interesting and instructive. We'll be glad to send you *your copy*.

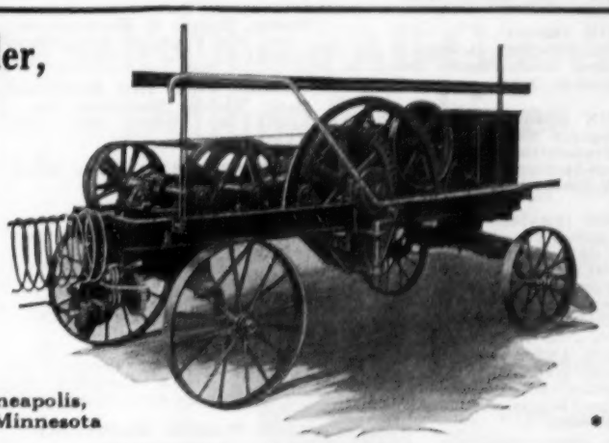
The F. B. Shuster Company
New Haven, Conn.
Formerly John Adt & Son *Est. 1866*

The KARDONG Power Bar Bender, Motor or Gas Engine Equipment

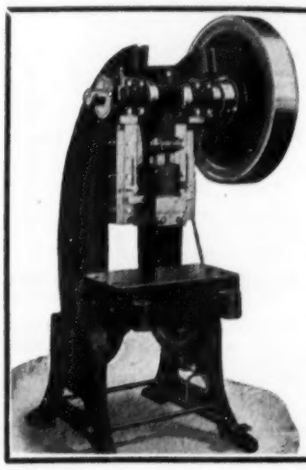
Power Bar and Stirrup Benders also full Line of Hand Benders

Bends all sizes of reinforcing steel up to one and one-half inches. Will bend from one to six bars in one operation depending on size of bars bent. Fully equipped with gauges to assure accuracy as well as speed in bending and built to stand up under rough usage. Sold with or without coiler, also without trucks for shop use. Fifteen years of experience in the Manufacturing of Bar Benders.

Be sure and write for full details



KARDONG BROTHERS, Minneapolis, Minnesota

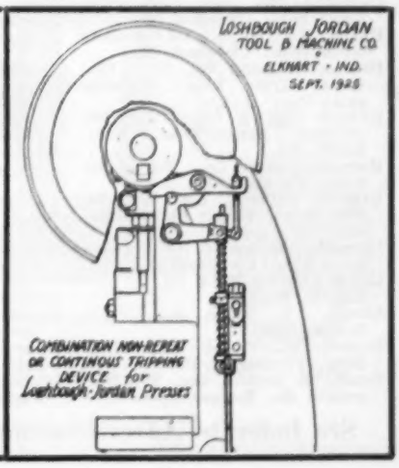


Guaranteed for One Year

Shaft and frame of every Loshbough-Jordan Press are guaranteed for one year against breakage while operating within rated speeds.
Thirty days' free trial will convince you. Test a Loshbough-Jordan for accuracy, speed, convenience and economy, and if not satisfactory on all counts, send it back. Details on request.

Loshbough-Jordan Tool & Machine Co.
ELKHART, INDIANA

Dealers: Herberts Machinery & Supply Co., San Francisco and Los Angeles, Cal. Northern Machinery Co., Minneapolis. Brown Machinery Co., St. Louis. English Tool & Supply Co., Kansas City, Mo. Stocker-Rumely-Wachs Co., Chicago. Riverside Machinery Depot, Detroit. M. Reid Co., Cleveland, O. M. D. Larkin Supply Co., Dayton, O. Joseph Beal & Co., Boston, Mass. J. L. Lucas & Son, Inc., Bridgeport, Conn. Triplex Machine Tool Co., New York City. Joseph Hyman & Sons, Philadelphia, Pa.


LOSHBOUGH JORDAN
TOOL & MACHINE CO.
ELKHART - IND.
SEPT. 1925
COMBINATION NON-REPEAT OR CONTINOUS TRIPPING DEVICE for Loshbough-Jordan Presses

INSULATING BRICK
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Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

INSULATING POWDER AND CEMENT
Celite Products Co., 11 Broadway, New York City.

INSULATION (Furnace, Boiler Settings, Ovens, Steam Pipe, etc.)
Armstrong Cork & Insulation Co., 101 24th St., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

INSULATORS
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

IRON
Interstate Iron & Steel Co., 104 So. Michigan Ave., Chicago, Ill.
Newport Rolling Mill Co., Newport, Ky.
Penn Iron & Steel Co., Creighton, Pa.

IRON (Bar)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.

IRON (Chain)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Creighton, Pa.

IRON (Engine Bolt)
Bethlehem Steel Co., Bethlehem, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON (Norway-Swedish)
Brown-Wales Co., 493 C St., Boston, Mass.

IRON (Silvery)
Globe Iron Co., Jackson, O.
Keokuk Electro-Metals Co., Keokuk, Iowa.

IRON (Stainless)
Allegheny Steel Co., Brackenridge, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.

IRON (Staybolt)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON AND STEEL (Swedish)
Brown-Wales Co., 493 C St., Boston, Mass.
Ljusne-Woxna, Aktiebolag, Ljusne, Sweden.

IRON ORE
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Hanna, The M. A., Co., Leader-News Bldg., Cleveland, O.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
Marquette Ore Co., Rockefeller Bldg., Cleveland, O.
Park & Williams, Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Quinn, Clement K., & Co., Duluth, Minn.
Savage, John A., & Co., Duluth, Minn.
Snyder, W. P., & Co., Oliver Bldg., Pittsburgh, Pa.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.

JOISTS AND STUDS (Pressed Steel)
Central Steel Co., Massillon, O.
Truscon Steel Co., Youngstown, O.

KEYS AND COTTERS (Machine)
Morton Mfg. Co., Muskegon Heights, Mich.

KEYSEATING MACHINES
Morton Mfg. Co., Muskegon Heights, Mich.

KNIVES AND SHEAR BLADES —See SHEAR BLADES AND KNIVES

LADLES
Pennsylvania Engineering Works, New Castle, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Truscon Steel Co., Youngstown, O.

LAKE PASSENGER & FREIGHT
Cleveland & Buffalo Transit Co., E. 9th St., Cleveland, O.

LATH (Expanded Metal)
Central Steel Co., Massillon, O.
Truscon Steel Co., Youngstown, O.

LATHES
McCabe, J. J., Lathe & Machinery Corp., 149 Broadway, New York City.
Ryerson, Jos. T., & Son, Inc., 10th and Rockwell Sts., Chicago, Ill.

LATHES (Roll Turning)
Becker, H. & Co., G. M. B. H., Dusseldorf, Germany.
Lewis Foundry & Machine Co., Farmers Bank Bldg. Pittsburgh, Pa.
Standard Engineering Co., Ellwood City, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

LEAD BURNING APPARATUS (Oxy-Acetylene)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

LEAD POTS
Farrell-Check Steel Foundry Co., Sandusky, O.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.

LEADER PINS AND BUSHINGS
Danly Machine Specialties, Inc., 4915 N. Lincoln Ave., Chicago, Ill.

LEATHER BELTING—See BELTING (Leather)

LEVELING MACHINES
United Engineering & Foundry burgh, Pa.
Co., Farmers Bank Bldg., Pitts-

LIFTING MAGNETS
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, O.

LOCK WASHER MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

LOCOMOTIVE CRANES — See CRANES (Locomotive)

LOCOMOTIVES (Electric)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Gasoline)
Vulcan Iron Works, 1730 Main St., Wilkes-Barre, Pa.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Industrial)
Poliakoff, R., 709 Sixth Ave., New York City.
Vulcan Iron Works, 1730 Main St., Wilkes-Barre, Pa.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Steam)
Poliakoff, R., 709 Sixth Ave., New York City.

LOCOMOTIVES (Storage Battery)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

LUBRICATORS (Forced Feed)
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.

LUMBER
Northern Hemlock & Hardwood Mfrs. Assoc., Oshkosh, Wis.

LUMBER (Boxing)
Northern Hemlock & Hardwood Mfrs. Assoc., Oshkosh, Wis.

LUMBER (Crating)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.
Northern Hemlock & Hardwood Mfrs. Assoc., Oshkosh, Wis.

LUMBER (Creosoted or Zinc Treated)
Century Wood Preserving Co., 1053 Century Bldg., Pittsburgh, Pa.

LUMBER (Flask)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.

LUMBER (Template)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.

MACHINE KEYS—See KEYS AND COTTER (Machine)

MACHINE WORK
Adamson Machine Co., The, Akron, O.
Air Tight Steel Tank Co., Mansion and Gloster Sts., Pittsburgh, Pa.
Akron Gear & Eng. Co., The, Akron, O.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Hanna Engineering Works, 1765 Elston Ave, Chicago, Ill.
Johnson, Carlyle, Machine Co., Manchester, Conn.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

MACHINERY (Used)
Carle Machinery Co., 546 E. Woodbridge St., Detroit, Mich.
Crawford, F. H., & Co., Inc., 50 Church St., New York City.
Fitzsimmons & Cole Machinery Co., 1208 House Bldg., Pittsburgh, Pa.
Ideal Machinery Co., Plainville, Conn.
Leaf, E. B., Real Estate Trust Bldg., Philadelphia, Pa.
Lucas, J. L., & Son, Inc., 3 Fox St., Bridgeport, Conn.
Marr-Galbreath Machinery Co., 58 Water St., Pittsburgh, Pa.
Miles Machinery Co., Saginaw, Mich.
Morey & Co., Inc., 410 Broome St., New York City.
Nashville Industrial Corp., Old Hickory, Tenn.
Niles, F. H., & Co., Inc., Claremont and Mallory Ave., Jersey City, N. J.
Potts, Henry, & Co., 1608 Bankers Trust Bldg., Philadelphia, Pa.
Reliance Machinery Sales Co., 1406 Brighton Rd., Pittsburgh, Pa.
Russell Machine Co., Pittsburgh, Pa.
Scheinert, R., Co., 123-125 N. Third St., Philadelphia, Pa.
Simmons Machine Tool Corp., Albany, N. Y.
Wickes Machinery Co., Claremont and Mallory Aves, Jersey City, N. J.

MAGNETS (Lifting)—See LIFTING MAGNETS

MALLETS (Rawhide)
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.

MANGANESE METALS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

MAGNESITE (Dead Burned)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.

MANIFOLDS (Oxygen)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

MATERIAL HANDLING MACHINERY
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, O.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
McMyler-Interstate Co., Bedford, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

MEEHANITE METAL
Morrison, J. S., Co., Inc., 528 Oliver Bldg., Pittsburgh, Pa.

MERCHANT MILL EQUIPMENT
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

METAL (Perforated)—See PERFORATED METAL

METAL CLEANERS
American Chemical Paint Co., Ambler, Pa.
Ford, J. B., Co., The, Wyandotte, Mich.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Industrial Chemical Products Co., 3200 Woodbridge St., Detroit, Mich.

METAL RUST PROOFING
Parker Rust Proof Co., 2184 E. Milwaukee Ave., Detroit, Mich.

METAL SPECIALTIES AND PARTS
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Mundt, Chas., & Sons, Johnston & Fairmount Aves., Jersey City, N. J.

METALS (Nonferrous)
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

METAL STAMPINGS — See STAMPINGS

METAL WORKING MACHINES—See SHEET METAL WORKING MACHINERY

METERS (Gas and Air)
Connersville Blower Co., The, Connersville, Ind.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Roots, P. H. & F. M., The, Connersville, Ind.

MILLING MACHINES
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

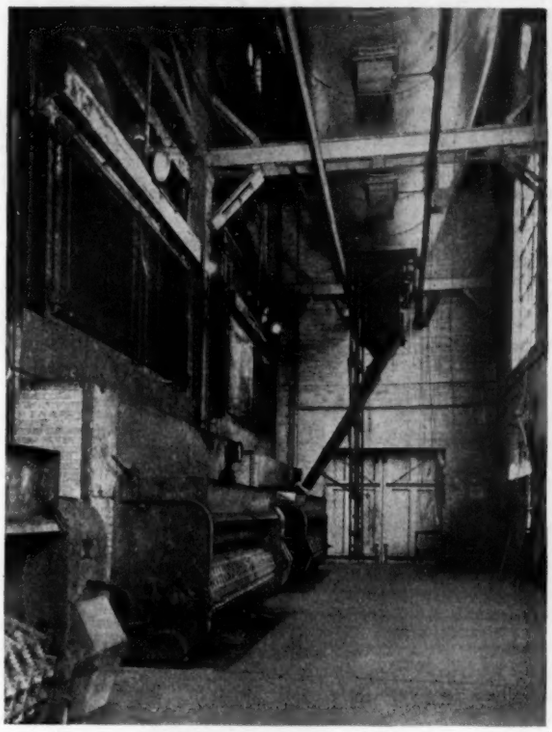
MILLS (Blooming, Universal, Plate, Sheet, Etc.)
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
National Roll & Foundry Co., Avonmore, Pa.
Treadwell Engineering Co., Easton, Pa.

MINING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

MIXERS (Sand)—See SAND MIXERS, CUTTERS AND SIFTERS

MIXING, KNEADING, TEMPERING AND PUGGING MACHINERY
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



Webster traveling weigh larry distributing coal to stokers in a power plant

The proper method and the proper equipment

The right method of doing your specific material handling job and the right equipment with which to do it can both be supplied by The Webster Mfg. Company.

With fifty years' experience in solving the material handling problems of America's industries and with unlimited facilities for building the necessary equipment, Webster is looked upon as headquarters for material handling machinery.

Webster designs and builds mechanical handling equipment for power plants, cement mills, chemical plants, coal tipples, locomotive coaling stations, foundries, steel plants and countless other industries handling materials in bulk or package.

Upon request and without obligation to you, Webster engineers will study your requirements and make recommendations.

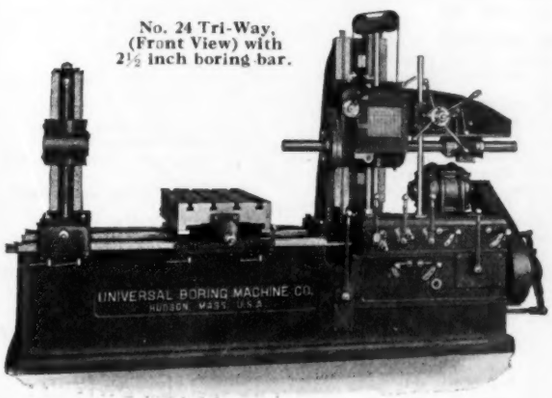
The Webster Mfg. Company
4500-4560 Cortland Street
CHICAGO

WEBSTER-BRINKLEY CO., SEATTLE, WASH. WEBSTER-INGLIS Ltd., TORONTO, ONT.

BOSTON BUFFALO CINCINNATI CLEVELAND NEW YORK PHILADELPHIA PITTSBURGH

UNIVERSAL
HORIZONTAL BORING MACHINES

No. 24 Tri-Way, (Front View) with 2½ inch boring bar.



WE WILL EXHIBIT NATIONAL STEEL & MACHINE TOOL EXPOSITION CHICAGO MUNICIPAL PIER SEPT. 20-24 BOOTH NO.

"Where Accuracy Counts, We Win"

UNIVERSAL BORING MACHINE COMPANY
HUDSON, MASS., U. S. A.

Self-Oiling All-Geared Drilling Machines

Self-Oiling

If you want the highest kind of drilling production in your shop, use Self-Oiling All-Geared Drills. They not only have a good reputation for fast drilling, but they also have a reputation for low maintenance costs as well. Reducing high production cost is an easy matter with Self-Oiling All-Geared Drills.

Write for Catalog "T".

8 Each Geared Feeds and Speeds

WE WILL EXHIBIT NATIONAL STEEL & MACHINE TOOL EXPOSITION CHICAGO MUNICIPAL PIER SEPT. 20-24 BOOTH NO. 245

BARNES DRILL CO., INC., *1907*
827-837 Chestnut St.
Rockford, Illinois, U. S. A.

MOLDING MACHINES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
Herman Pneumatic Machine Co., 806 Union Bank Bldg., Pittsburgh, Pa.

MOLDING MACHINES (Tractor Type Sand Throwing)
Beardsley & Piper Co., 2541 N. Keeler Av., Chicago, Ill.

MOLDS (Ingot) — See INGOT MOLDS

MONEL METAL
International Nickel Co., 67 Wall St., New York City.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

MONORAIL SYSTEMS
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

MOTORS (Electric)
General Electric Co., Schenectady, N. Y.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MUCK BAR
Bethlehem Steel Co., Bethlehem, Pa.
Penn Iron & Steel Co., Creighton, Pa.

NAILS
American Steel & Wire Co., 208 S. La Salle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Corp., Balfour Bldg., San Francisco, Cal.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

NAILS (Coated and Galvanized)
American Steel Co., Ellwood City, Pa.
Youngstown Sheet & Tube Co., The, Youngstown, O.

NICKEL
American Nickel Corp., Clearfield, Pa.
International Nickel Co., 67 Wall St., New York City.
United States Nickel Co., New Brunswick, N. J.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

NICKEL STEEL (Cold Drawn)
Bethlehem Steel Co., Bethlehem, Pa.

NIPPLES (Brass and Iron)
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.

NITROGEN (Gas)
Linde Air Products Co., 30 E. 42nd St., New York City.

NUTS
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

OIL (Fuel)—See FUEL OIL

OIL BURNING EQUIPMENT
Hauck Mfg. Co., 114 Tenth St. Brooklyn, N. Y.

OIL RECOVERY SYSTEMS
Barrett, Leon J., Co., P. O. Box 44, Worcester, Mass.

OPEN-HEARTH FURNACES—See FURNACES (Open Hearth)

ORES-CHROME (Lump or Ground)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.

OVENS (Coke By-Product Recovery)
Koppers Co., The, Pittsburgh, Pa.

OXY-ACETYLENE WELDING AND CUTTING—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

OXYGEN IN CYLINDERS
Linde Air Products Co., 30 E. 42nd St., New York City.

PACKING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

PAINTS
Truscon Steel Co., Youngstown, O.

PATTERN LUMBER (White and Sugar Pine)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.

PERFORATED METAL
Chicago Pneumatic Co., 2445 W. 24th Place, Chicago, Ill.
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Harrington & King Perforating Co., The, 5634 Fillmore St., Chicago, Ill.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Mundt, Chas. & Sons, Johnston & Fairmount Ave., Jersey City, N. J.
Reliable Perforating Co., 1925 N. Paulina St., Chicago, Ill.
Standard Staming & Perforating Co., 4720-22 W. 5th Ave., Chicago, Ill.

PERMANENT MOLDING MACHINES—See MOLDING MACHINES (Permanent)

PICKLING COMPOUND
American Chemical Paint Co., Ambler, Pa.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.

PICKLING MACHINES
Mesta Machine Co., Homestead, Pa.

PICKS, MATTOCKS, ETC.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.

PIG IRON
Bethlehem Steel Co., Bethlehem, Pa.
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Globe Iron Co., Jackson, O.
Hanna, The M. A., Co., Leader-News Bldg., Cleveland, O.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.
Lavino, E. J., & Co., Bullit Bldg., Philadelphia, Pa.
Ljusne-Woxna, Aktiebolag, Ljusne, Sweden.
Mohr, J. J., & Son, Bullitt Bldg., Philadelphia, Pa.
Park & Williams, Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Pilling & Co., Inc., 1500 Chestnut St., Philadelphia, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Savage, John A., & Co., Duluth, Minn.
Snyder, W. P., & Co., Oliver Bldg., Pittsburgh, Pa.
Stewart Furnace Co., 1854 Union Trust Bldg., Cleveland, O.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.
Valley Mould & Iron Corp., Sharpsville, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Weidener Bld., Philadelphia, Pa.

PILE DRIVERS
Weidener Bldg., Philadelphia, Pa.
McMyler-Interstate Co., Bedford, O.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.

PILING (Steel Sheet)
Bethlehem Steel Co., Bethlehem, Pa.
Wemlinger, Inc., 149 Broadway, New York City.

PINIONS—See GEARS AND GEAR CUTTING

PIPE (Brass, Bronze and Copper)
American Brass Co., 25 Broadway, New York City.

PIPE (Cast Iron)
United States Cast Iron Pipe & Foundry Co., Burlington, N. J.

PIPE (Iron)
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.

PIPE (Riveted Steel)
Abendroth & Root Mfg. Co., Woolworth Bldg., New York City.

PIPE (Spiral Riveted)
Adendroth & Root Mfg. Co., Woolworth Bldg., New York City.

PIPE (Standard)
Wheeling Steel Corp., Wheeling, W. Va.

PIPE (Steel)
Central Tube Co., First National Bank Bldg., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE (Wrought Steel)
Central Tube Co., First National Bank Bldg., Pittsburgh, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PIPE BENDING MACHINES
American Pipe Bending Machine Co., 93 Pearl St., Boston, Mass.

PIPE CUTTING AND THREADING MACHINERY
Curtis & Curtis Co., 316 Garden St., Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Landis Machine Co., Waynesboro, Pa.
Standard Engineering Co., Ellwood City, Pa.
Williams Tool Corp., W. 12th and Liberty, Erie, Pa.

PIPE FITTINGS
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jenkins Bros., 80 White St., New York City.
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.
Power Piping Co., 829 Beaver Ave., Pittsburgh, Pa.

PIPE MILL MACHINERY
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

PIPE STRAIGHTENING MACHINES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

PIPE WRENCHES—See WRENCHES (Pipe)

PIPING CONTRACTORS
Floersheim, B., & Co., 622 Farmers Bank Bldg., Pittsburgh, Pa.
Power Piping Co., 829 Beaver Ave., Pittsburgh, Pa.
Power Piping Co., 829 Beaver Av., Pittsburgh, Pa.

PLANERS AND SHAPERS
Morton Mfg. Co., Muskegon, Mich.
Rockford Machine Tool Co., 2400 Kishwaukee Ave., Rockford, Ill.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

PLATE CASTORS
Hyatt Roller Bearings Co., Newark, N. J.

PLATES (Circular and Disk Steel)
Truscon Steel Co., Youngstown, O.

PLATES (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Morris, Wheeler & Co., 30th and Locust St., Philadelphia, Pa.

PLATES (Rolled Steel—Floor)
American Pressed Steel Co., Commercial Trust Bldg., Philadelphia, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

PLATES (Sheared and Universal)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Granite City Steel Works, The, Granite City, Ill.
Illinois Steel Co., 208 La Salle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1219 Wabansia Ave. Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Morris & Pailey Division, Oliver Iron & Steel Corp., Wilson Station, Pittsburgh, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Youngstown, O.
Republic Iron & Steel Co.,
Ryerson, Jos. T., & Son Inc 16th and Rockwell Sts., Chicago, Ill.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PLATES (Terne and Tin)—See TIN PLATE

PLATING (Chrome Alloy)
Chemical Treatment Co., 26 Broadway, New York City.

PLATING (Rust, Acid, and Heat Resisting)
Chemical Treatment Co., 26 Broadway, New York City.

PNEUMATIC DIE CUSHIONS
Marquette Tool & Mfg. Co., The, 319 W. Ohio St., Chicago, Ill.

PNEUMATIC TOOLS—See TOOLS—(Pneumatic)

POLES (Tubular Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PORTABLE LOADERS (Bucket or Belt)
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

POWDERED COAL EQUIPMENT
Combustion Engineering Corp., 43 Broad St., New York City.
Fuller-Lehigh Co., Fullerton, Pa.

POWER TRANSMISSION
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Ave., Chicago, Ill.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

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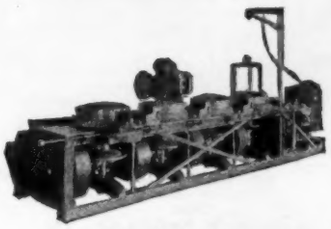
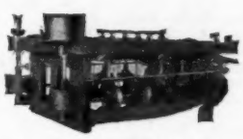
HIGH-PRODUCTION CONTINUOUS WIRE DRAWING MACHINERY



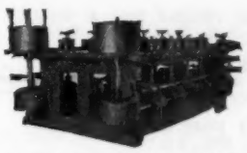
Rod Frame,
No. 5 to No. 14 Wire

Speeds of blocks varied instantly and automatically. Water-cooled.

(No differential gearing of any kind).



Double 8-Draft Wet
No. 22—No. 36 Wire



Double 5-Draft Wet
No. 14—No. 23 Wire

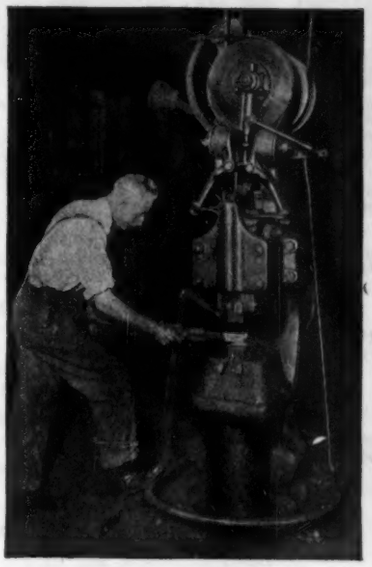
Production with average operator No. 22-33 wire 6 blocks—660 lbs. in 10 hours.

Stanner & Hartley TRADE MARK

Production with average operator No. 14-20 wire 3 blocks—3300 lbs. in 10 hours.

Worcester, Mass.

The BRADLEY For Power



HUSKY
To stand pounding without flinching.

ENDURING
To Stand the demand for long service.

SMOOTH RUNNING
To insure high quality work.

Made in 4 styles and 32 sizes.

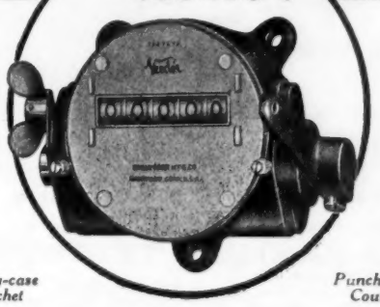
A style and size for every forging requirement.

EQUIPPED FOR BELT OR MOTOR DRIVE

Write for further details

C. C. BRADLEY & SON, Inc.
432 N. Franklin St. Syracuse, N. Y.

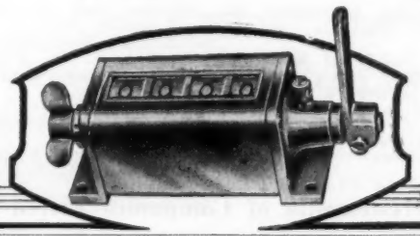
Veeder



Heavy-case Ratchet *Punch Press Counter*

THIS DIAL will never lose a minute in telling you the work-situation at a machine. The *operator* will never lose a minute without his loss showing up in the *record*. Production *moves*—for nothing else moves the figures of the Counter. *Booklet?*

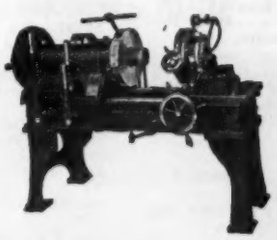
THE VEEDER MFG. CO., 49 Sargeant St. Hartford, Conn.



Jarecki

PIPE THREADING MACHINES

Were designed with a thorough understanding of the work expected of them.



THE "Jarecki" machines are sturdy, dependable, and do their work most economically. Put your pipe threading work on an efficiency basis with the unsurpassed "Jarecki."

Write for specification sheets

[Established 1852]

Jarecki

Jarecki Manufacturing Company
Erie, Penna., U. S. A.

PREHEATING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

PRESSED METAL—See STAMPINGS

PRESSED STEEL PARTS—See STAMPINGS

PRESSES
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Cleveland Punch & Shear Works, 3917 St. Clair Ave., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Federal Press Co., Elkhart, Ind.
Loshbough-Jordan Tool & Machine Co., Elkhart, Ind.
Mesta Machine Co., Homestead, Pa.
Moloch Co., The, Kaukauna, Wis.
Toledo Machine & Tool Co., Toledo, O.

PRESSES (Die Cutting)
Logemann Bros. Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Forging)
Morgan Engineering Co., The, Alliance, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

PRESSES (Hydraulic)
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro. Pa.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Chambersburg Engineering Co, Chambersburg, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Morgan Engineering Co., The Alliance, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PRESSES (Metal Drawing, Etc.)
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Federal Press Co., Elkhart, Ind.
Loshbough-Jordan Tool & Machine Co., Elkhart, Ind.

PRESSES (Roofing & Corrugating)
Loshbough-Jordan Tool & Machine Co., Elkhart, Ind.
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

PRESSES (Scrap Bundling and Baling)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Shaft and Pipe Straightening—Hydraulic)
Logemann Bros. Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Straightening)
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

PRESSES (Sub)
U. S. Tool Co., Inc., Ampere, N. J.

PRODUCER GAS SYSTEMS—See GAS PRODUCER PLANTS

PUMPS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Connersville Blower Co., The, Connersville, Ind.
Deming Co., The, Salem, Ohio.

PUMPS (Boiler Feed)
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Centrifugal)
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Force)
Deming Co., The, Salem, Ohio.

PUMPS (Hand & Power)
Myers, F. E., & Brother Co., The, Ashland, Ohio.

PUMPS (Hydraulic)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PUMPS (Industrial)
Deming Co., The, Salem, Ohio.

PUMPS (Power)
Deming Co., The, Salem, Ohio.

PUMPS (Spray)
Deming Co., The, Salem, Ohio.

PUMPS (Steam)
Ingersoll-Rand Co., 11 Broadway, New York City.

PUNCHES (Multiple)
Cleveland Punch & Shear Works Co., Inc., 3917 St. Clair Ave., Cleveland, Ohio.
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

PUNCHES AND DIES
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Marchant, George F., Co., 1434 So. Rockwell St., Chicago, Ill.

PUNCHES & SHEARS (Hand)
Whitney Metal Tool Co., Rockford, Ill.

PUNCHING AND SHEARING Machinery
Beatty Machine & Mfg. Co., Hammond, Ind.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Cleveland Punch & Shear Works, 3917 St. Clair Ave., Cleveland, O.
Long & Allstatter Co., Hamilton, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

RACKS (Machine)
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

RAILS
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Frank, M. K., Union Trust Bldg., Pittsburgh, Pa.
Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.
Richardson & Co., Inc., 518 Oliver Bldg., Pittsburgh, Pa.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.

RAILS (Girder)
Bethlehem Steel Co., Bethlehem, Pa.

REDUCERS (Speed-Worm and Spur) See SPEED REDUCERS (Worm and Spur)

REFRACTORIES
Ashland Fire Brick Co., Ashland, Ky.
Brighton Fire Brick Co., Block House Run, New Brighton, Pa.
Carborundum Co., The, Buffalo and 18th Sts., Niagara Falls, N. Y.
Crescent Refractories Co., Curwensville, Pa.
Dover Fire Brick Co., 1012 Nat'l City Bank Bldg., Cleveland, O.
Eureka Fire Brick Works, First National Bank Bldg., Pittsburgh, Pa.
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Hydraulic Press Brick Co., Central National Bank Bldg., St. Louis, Mo.
Illinois Clay Products Co., 214 Barber Bldg., Joliet, Ill.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede Christy Clay Products Co., St. Louis, Mo.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Queen's Run Refractories Co., Inc., Lock Haven, Pa.
Soisson, Joseph, Fire Brick Co., Connellsville, Pa.
Stowe-Fuller Refractories Co., The, 1650 Union Trust Bldg., Cleveland, O.
Superior Basic Brick Co., 517 Bessemer Bldg., Pittsburgh, Pa.
Union Mining Co., 1113 Fidelity Bldg., Baltimore, Md.
U. S. Refractories Corp., Mt. Union, Pa.
Walsh Fire Clay Products Co., 4070 N. Main St., St. Louis, Mo.

REGISTERS (Heating and Ventilating)
Auer Register Co., The, Payne Ave. and E. 37th St., Cleveland, Ohio.

REGULATORS (Compressed Gas)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

REINFORCEMENTS (Steel)
Truscon Steel Co., Youngstown, O.

RHEOSTATS
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

RINGS (Welded Iron & Steel)
Akron-Selle Co., Akron, O.

RINGS (Weldless, Forged)
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.

RIVET FORGES (Oil burning)
Hauck Mfg. Co., 114 Tenth St., Brooklyn, N. Y.

RIVET HEATERS (Electric)
General Electric Co., Schenectady, N. Y.

RIVET SETS
Cleveland Punch & Shear Works Co., Inc., 3917 St. Clair Ave., Cleveland, Ohio.
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.
Marchant, George F., Co., 1434 S. Rockwell, Chicago, Ill.

RIVETERS (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.

RIVETING MACHINERY
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Shuster, The F. B., Co., New Haven, Conn.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

RIVETS
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Progressive Mfg. Co., Torrington, Conn.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

ROD MILLS
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

RODS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

RODS (Brass, Bronze, Copper and Nickel Silver)
American Brass Co., 25 Broadway, New York City.

RODS (Drill)
Globe Wire Co., Sharpsburg, Pa.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

RODS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.

RODS (Welding)—See WELDING RODS

ROLL HEATERS (Electric)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

ROLLING DOORS AND SHUTTERS
Kinner Manufacturing Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

ROLLING MILL BEARINGS
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearing Co., Stamford, Conn.

ROLLING MILL EQUIPMENT
Adamson Machine Co., The, Akron, Ohio.
Alliance Machine Co., The, Alliance, O.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Mesta Machine Co., Homestead, Pa.
Monessen Foundry & Machine Co., Monessen, Pa.
Morgon Construction Co., Worcester, Mass.
Morgan Engineering Co., The, Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Standard Engineering Co., Elwood City, Pa.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

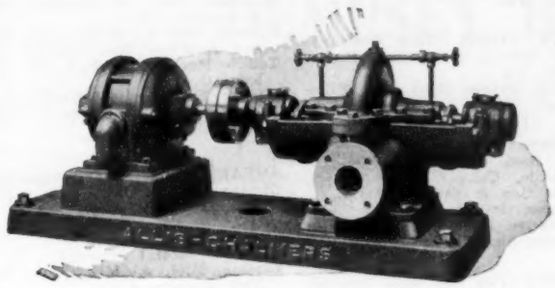
ROLLING MILL FURNACES
Chapman-Stein Furnace Co., Mt. Vernon, Ohio.

ROLLING MILLS (Consulting Engineers)
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

ROLLING MILLS (Contracting Engineers)
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, Ohio.

ROLLS (Steel)
Adamson Machine Co., The, Akron, Ohio.
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Mesta Machine Co., Homestead, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., Avonmore, Pa.
Pittsburgh Rolls Corp., 41st St. and A. V. Ry., Pittsburgh, Pa.
Standard Engineering Co., Ellwood City, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



PUMPING COSTS REDUCED

Combined units consisting of Allis-Chalmers Centrifugal Pump and drive selected by our engineers have so frequently been the means of considerable savings that you should benefit by our experience wherever you have any pumping problems under consideration.

ALLIS-CHALMERS
MILWAUKEE, WIS. U.S.A.

Spencer Turbo-Compressors
furnish constant steady flow of air, free from pulsations, for oil and gas burning furnaces, etc.

The Spencer Turbine Co.
Hartford, Conn.

Producer Gas Systems

WE GUARANTEE RESULTS
Using Bituminous and Anthracite Coals Raw and Scrubbed Gas for Displacing Oil, City and Natural Gas, Coal and Coke in furnaces of all descriptions.

Flinn & Dreffein Co.
435 S. Dearborn St. Chicago Ill.

Hydraulic Machinery
Automatic Gas Producers

R. D. WOOD & CO.
ESTABLISHED 1803
PHILADELPHIA, PA.

Catalogues mailed upon request

COSTELLO
Engineering Co.
519 Oliver Bldg., Pittsburgh, Pa., U.S.A.

FURNACE DESIGNERS AND CONTRACTORS
ENGINEERING

68

installations of the COSTELLO PATENTED CONTINUOUS PAIR FURNACE were made during 1925. Names of buyers on request.

Here Are 5 Reasons Why

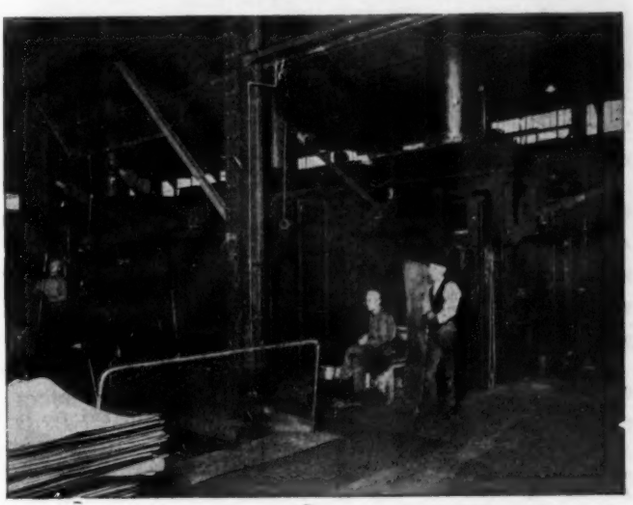
1—Does not scale Sheet Bar.
2—Heats Bars Uniformly.
3—Increases Tonnage.
4—Decreases Fuel Consumption.
5—Improves the Quality of the Finished Sheet.

Continuous Pair and Annealing Furnaces

Billet and Bloom Heating Furnaces

Box and Blue Annealing

Furnaces for Sheet and Strip Mills



Front View of Two of SIX Costello Continuous Pair and Sheet Furnaces, Seneca Iron and Steel Co., Buffalo, N.Y.

ROLLS (Wood)
Dart, E. M., Mfg. Co., Providence, R. I.

ROOFING AND SIDING (Iron and Steel)
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Newport Rolling Mill Co., Newport, Ky.

ROPE SOCKETS (Cast Steel)
Chicago Steel Foundry Co., Kedzie Ave. at 37th St., Chicago, Ill.

RUST PREVENTATIVE
American Chemical Paint Co., Ambler, Pa.
Parker Rust Proof Co., 2184 E. Milwaukee Ave., Detroit, Mich.

RUST REMOVING COMPOUND
American Chemical Paint Co., Ambler, Pa.

SAFE ENDS (Boiler Tube)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

SAFETY DEVICES (Electric)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

SAND
Portage Silica Co., The, 602 Stambaugh Bldg., Youngstown, O.
Standard Silica Co., 39 S. LaSalle St., Chicago, Ill.

SAND (Molding)
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Standard Silica Co., 39 S. LaSalle St., Chicago, Ill.

SAND (Sandblast)
Portage Silica Co., The, 602 Stambaugh Bldg., Youngstown, O.
Standard Silica Co., 39 S. LaSalle St., Chicago, Ill.
United States Silica Co., 122 South Michigan Ave., Chicago, Ill.

SAND (Silica)
Standard Silica Co., 39 S. La Salle St., Chicago, Ill.
United States Silica Co., 122 So. Michigan Ave., Chicago, Ill.

SANDBLAST ABRASIVES (Shot and Grit)
Pittsburgh Crushed Steel Co., 61st & A. V. R. R., Pittsburgh, Pa.

SANDBLAST EQUIPMENT AND ACCESSORIES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Mott Sand Blast Mfg. Co., 4611-4621 Flournoy St., Chicago, Ill.
Pangborn Corporation, P. O. Box 858, Hagerstown, Md.
Sly, W. W., Mfg. Co., 4700 Train Ave., Cleveland, O.

SAND CONVEYING AND HANDLING MACHINERY
Bartlett & Snow, C. O., Co., 6203 Harvard Ave., Cleveland, O.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

SAND MIXERS, CUTTERS AND SIFTERS
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

SAND MIXERS (Core and Facing Sand)
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

SAND RAMMERS
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

SAND RECLAIMERS
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

SAND SLINGERS
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

SASH PAINT
Skybryte Co., The, Keith Bldg., Cleveland, O.

SASH (Steel Casement)
Truscon Steel Co., Youngstown, O.

SAW SHARPENING MACHINES
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

SAWS (Cold and Hot Metal)
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

SAWS (High Speed Friction)
Ryerson, Jos. T., & Son, Inc., 16 and Rockwell Sts., Chicago, Ill.

SCALES, AUTOMATIC DIAL (Heavy Duty, Bench, Overhead Track, Tank, Hanging, Packing, Counting, Special Purposes)
American Kron Scale Co., 430 E. 53rd St., New York City.
Fairbanks Company, Broome & LaFayette Sts., New York City.
Fairbanks, Morse Co., Inc., 900 S. Wabash Ave., Chicago, Ill.
Toledo Scale Co., Monroe & Albion Sts., Toledo, O.

SCALES (Dial)
American Kron Scale Co., 430 E. 53rd St., New York City.
Fairbanks Company, Broome & LaFayette Sts., New York City.
Fairbanks, Morse & Co., 900 So. Wabash Ave., Chicago, Ill.

SCALES (Industrial, Motor Truck, Railroad Track, Rolling Mill)
American Kron Scale Co., 430 E. 53rd St., New York City.
Fairbanks Company, Broome & LaFayette Sts., New York City.
Fairbanks, Morse & Co., Inc., 900 S. Wabash Ave., Chicago, Ill.

SCLEROSCOPES, HARDNESS MEASURING
Shore Instrument & Mfg. Co., Van Wyck Ave. & Carll St., Jamaica, N. Y.

SCRAP BALING PRESSES
Logemann Bros., Co., 3126 Burleigh St., Milwaukee, Wis.

SCRAP BUNDLING MACHINES (Wire Mills)
Vaughn Machinery Co., The, Cuyahoga Falls, O.

SCREENS
Chicago Perforating Co., 2445 W. 24th Place, Chicago, Ill.
Harrington & King Perforating Co., The, 5634 Fillmore St., Chicago, Ill.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Standard Stamping & Perforating Co., 4720-22 W. 5th Ave., Chicago, Ill.

SCREENS AND SIEVES
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Mundt, Chas., & Sons, Johnston and Fairmont Aves., Jersey City, N. J.

SCREW MACHINE PRODUCTS
Link-Belt Co., P. O. Box 85, Indianapolis, Ind.
Milford Mfg. Co., The, 33 Buckingham Ave., Milford, Conn.
Morganmade, Keene, N. H.
Wellman Products Co., The, 1448 E. 49th St., Cleveland, Ohio.

SCREW STOCK (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SCREW STOCK (Free Cutting)
Union Drawn Steel Co., Beaver Falls, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SCREWS
Clark Bros. Bolt Co., Milldale, Conn.
Muncie Cap & Set Screw Co., Muncie, Ind.
Progressive Mfg. Co., Torrington, Conn.

SCREWS (Cap and Heat Treated)
Rhode Island Tool Co., Providence, R. I.

SCREWS (Cap and Set)
Allen Mfg. Co., Hartford, Conn.

SCREWS (Cold Headed)
Muncie Cap & Set Screw Co., Muncie, Ind.

SEAMLESS STEEL TUBING—See TUBES (Cold Drawn Seamless Steel)

SEATS (Copper Valve)
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

SEPARATORS (Magnetic)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

SHAFT AND PIPE STRAIGHTENERS (Hydraulic)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

SHAFT HANGERS
Hyatt Roller Bearing Co., Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

SHAFTING
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Vanadium Corp. of America, 120 Broadway, New York City.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SHAFTING (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SHAFTING (Cold Drawn and Turned)
Bethlehem Steel Co., Bethlehem, Pa.

SHAFTING (Turned and Polished)
Union Drawn Steel Co., Beaver Falls, Pa.

SHAPERS—See PLANERS AND SHAPERS

SHAPES (Steel) — See STEEL (Structural)

SHEAR BLADES AND KNIVES
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Marchant, George F., Co., 1434 S. Rockwell St., Chicago, Ill.

SHEARS
Beatty Machine & Mfg. Co., Hammond, Ind.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, Ohio.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Morgan Engineering Co., The, Alliance, Ohio
National Roll & Foundry Co., Avonmore, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Toledo Machine & Tool Co., Toledo, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

SHEARS (Doubling and Squaring)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

SHEARS (Metal Slitting)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

SHEARS (Plate)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

SHEET BARS
Andrews Steel Co., Newsport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Wheeling Steel Corp., Wheeling, W. Va.

SHEET METAL PRODUCTS—See STAMPINGS

SHEET METAL STRAIGHTENERS
Shuster, The F. B., Co., New Haven, Conn.

SHEET METAL WORK
Crosby Co., The, 183 Pratt St., Buffalo, N. Y.

SHEET METAL WORKING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Inc., 3917 St. Clair Ave., Cleveland, Ohio.
Streine Tool & Mfg. Co., The, New Bremen, Ohio.
Toledo Machine & Tool Co., Toledo, Ohio.

SHEET MILLS
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.

SHEETS
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, O.
Columbia Steel Corp., Balfour Building, San Francisco, Calif.
Granite City Steel Works, The, Granite City, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Morris, Wheeler & Co., 30th & Locust Sts., Philadelphia, Pa.
Morris & Bailey Division, Oliver Iron & Steel Corp., Wilson Station, Pittsburgh, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Seneca Iron & Steel Co., Buffalo, N. Y.
Sheet Steel Trade Extension Committee, 715 Oliver Bldg., Pittsburgh, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Wheeling Steel Corp., Wheeling, W. Va.

SHEETS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

DEMPSEY Industrial Furnaces

DEMPSEY Furnaces have gained a merited reputation for continuous service with low operating and maintenance costs.

The truly satisfactory furnace is the one that sells additional equipment when it is required. The repeat order argument is an old one but it is just as sound as it is gratifying to the firm that builds a business on SERVICE.

The furnace that meets your requirements is a real asset.

We can build that furnace.

BEST Engineers will gladly assist you in determining your requirements. Address your inquiries to Dempsey Furnace Division.

DEMPSEY Plate Heating Furnace at plant of Reeves Brothers and Co., Birmingham, Ala.

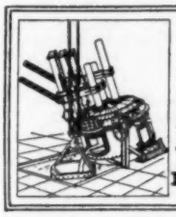
WE WILL EXHIBIT NATIONAL STEEL & MACHINE TOOL EXPOSITION CHICAGO MUNICIPAL PIER SEPT. 20-24 BOOTH NO. 2 1 5

W. N. BEST Corporation

Engineers and Manufacturers since 1890

11 BROADWAY NEW YORK CITY

WE WILL EXHIBIT NATIONAL STEEL & MACHINE TOOL EXPOSITION CHICAGO BOOTH NO. 7



Moore Rapid Electromelt Furnaces

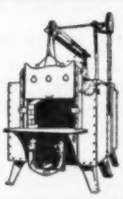
Ten Standard Sizes ½ to 24 Tons Capacity
Most Rapid and efficient for making
Tool Steels, Alloy Steels, Forging Steels
Steel Castings, Malleable Iron, Grey Iron
Carbide, Ferro-Alloys etc.
PITTSBURGH ELECTRIC FURNACE CORPORATION
P.O. Box 1125. PITTSBURGH, PA.

HOLCROFT & COMPANY

BUILT BY HOLCROFT & COMPANY DETROIT CONTRACTING ENGINEERS

OVENS-
FURNACES

Detroit 6545 Epworth Blvd. Michigan



INDUSTRIAL FURNACES
OF QUALITY

EVERYTHING FOR HEAT TREATING

The Strong, Carlisle & Hammond Co.
CLEVELAND, OHIO

SWINDELL FURNACES

For electric melting, heat treating & annealing furnaces. Open hearth & crucible steel melting furnaces. Heating and annealing furnaces. Gas producers. Furnace reversing valves. 21" to 48"

WILLIAM SWINDELL and BROTHERS
Pittsburgh, Pa.

FURNACES
—ALL TYPES—
RECUPERATORS
INTERNATIONAL FURNACE CO.
KEENAN BLDG., PITTSBURGH, PA.

Industrial Furnaces for All Purposes

GEORGE J. HAGAN COMPANY
Chamber of Commerce Bldg.
Pittsburgh, Penna.

Chicago San Francisco Detroit

HAUCK TRADE MARK

Venturi High Pressure
Oil Burners

"Save Oil and Repairs and Give More Even Heat in Furnace."
Send for Catalogue and Special Survey.

HAUCK MFG. CO. 114 Tenth St. Brooklyn, N. Y.

METALLURGICAL FURNACE
EQUIPMENTS

Pulverized Coal Fuel Oil Gas

FULLER-LEHIGH COMPANY
(A Babcock & Wilcox Organization)
FULLERTON, PA.

SHEETS (Automobile)
Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, Ohio.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Mansfield Sheet & Tin Plate Co., The, Mansfield, O.
Newton Steel Co., Youngstown, O.
Seneca Iron & Steel Co., Buffalo, N. Y.

SHEETS (Black)
Allegheny Steel Co., Brackenridge, Pa.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Works, The, Granite City, Ill.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Newton Steel Co., Youngstown, O.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Seneca Iron & Steel Co., Buffalo, N. Y.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Blue Annealed)
Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, Ohio.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, O.
Granite City Steel Works, The, Granite City, Ill.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Newton Steel Co., Youngstown, O.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Sharon Steel Hoop Co., Sharon, Pa.
Tennessee Coal, Iron & Railroad Co., 1851 Brown-Marx Bldg., Birmingham, Ala.
Trumbull Steel Co., The, Warren, Ohio.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

SHEETS (Box Annealed)
Sharon Steel Hoop Co., Sharon, Pa.

SHEETS (Brass, Bronze, Copper and Nickel Silver)
American Brass Co., 25 Broadway, New York City.

SHEETS (Cold Rolled)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Newton Steel Co., Youngstown, O.

SHEETS (Copper Steel)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

SHEETS (Corrugated)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Weirton Steel Co., Weirton, W. Va.

SHEETS (Deep Stamping)
Allegheny Steel Co., Brackenridge, Pa.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Newton Steel Co., Youngstown, O.

SHEETS (Electrical)
Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Mansfield Sheet & Tin Plate Co., The, Mansfield, O.
Trumbull Steel Co., The, Warren, O.
Wheeling Steel Corp., Wheeling, W. Va.

SHEETS (Galvanized)
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co. Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Works, The, Granite City, Ill.
National Enameling & Stamping Co., Granite City, Ill.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Trumbull Steel Co., The, Warren, Ohio.
Weirton Steel Co., Weirton, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

SHEETS (Locomotive Jacked)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

SHEETS (Metal Furniture)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

SHEETS (Perforated)
Erdle Perforating Co., 171 York St., Rochester, N. Y.

SHEETS (Pickled)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Newton Steel Co., Youngstown, O.

SHEETS (Roofing)—See ROOFING AND SIDING

SHEETS (Tin)—See TIN PLATE

SHELVING (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

SHIPBUILDING SHAPES
Bethlehem Steel Co., Bethlehem, Pa.

SHOVELS (Power)
Marion Steam Shovel Co., The, Marion, Ohio.

SIEVES
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

SLABS
Andrews Steel Co., Newport, Ky.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Wheeling Steel Corp., Wheeling, W. Va.

SLEEVES AND NOZZLES
Tempest Brick Co., Ltd., The, House Bldg., Pittsburgh, Pa.

SLITTING MACHINERY
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.

SOAKING PITS
Chapman-Stein Furnace Co., Mt. Vernon, O.

SPACING TABLES
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

SPECIAL MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Lammert & Mann Co., Chicago, Ill.
Morgan Engineering Co., The, Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Smith Gas Engineering Co., Dayton, Ohio.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Tioga Steel & Iron Co., 52nd & Grays Ave., Philadelphia, Pa.
Treadwell Engineering Co., Easton, Pa.
Wellman-Seaver-Morgan Co., 7025 Central Ave., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

SPECIAL SHAPES
Sharon Steel Hoop Co., Sharon, Pa.

SPECIAL SHAPES (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SPEED REDUCERS
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Rd., Chicago, Ill.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

SPEED REDUCERS (Worm & Spur)
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
James, D. O., Mfg. Co., 1120 W. Monroe St., Chicago, Ill.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.

SPIEGELEISEN
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

SPIKES
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.

SPRING MAKING MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

SPRINGS
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.
American Spring & Mfg. Co., Elm St., Holly, Mich.
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Barnes-Gibson-Raymond, Inc., 6400 Miller Ave., Detroit, Mich.
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.
Cook Spring Co., Ann Arbor, Mich.
Duer Spring & Mfg. Co., Pittsburgh, Pa.
Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.
Raymond Mfg. Co., Centre St., Corry, Pa.

SPRINGS (Car)
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.

SPRINGS (Coil & Elliptic)
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.
Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.

SPRINGS (Coil and Flat)
American Spiral Spring & Mfg Co., Arsenal Station, Pittsburgh, Pa.
American Spring & Mfg. Co., Elm St., Holly, Mich.
Barnes-Gibson-Raymond, Inc., 4200 Miller Ave., Detroit, Mich.
Bethlehem Steel Co., Bethlehem, Pa.
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.
Cook Spring Co., Ann Arbor, Mich.
Raymond Mfg. Co., Centre St., Corry, Pa.

SPRUE CUTTERS
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Shuster, The F. B., Co., New Haven, Conn.

STACKS (Steel)
American Bridge Co., The, 71 Broadway, New York City.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Morgan Engineering Co., The, Alliance, Ohio.
Sotter Bros., Inc., Pottstown, Pa.
Truscon Steel Co., Youngstown, O.

STAMPINGS
American Spring & Mfg. Co., Elm St., Holly, Mich.
American Tube & Stamping Co., The, Bridgeport, Conn.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, Ohio.
Central Iron & Steel Co., Harrisburg, Pa.
Crosby Co., The, 183 Pratt St., Buffalo, N. Y.
G G G Metal Stamping Co., Dept. D., Warren, Pa.
Gray, Peter, & Sons Co., Cambridge, Mass.
Joliet Wrought Washer Co., Joliet, Ill.
Lansing Stamping Co., Lansing, Mich.
Motor Wheel Corp., Lansing, Mich.
Truscon Steel Co., Youngstown, O.

STAMPINGS (Aluminum, Bronze, Copper, Brass, Steel)
Akron-Selle Co., Akron, Ohio.
Chicago Forging & Mfg. Co., 2004 Southport Ave., Chicago, Ill.

STARTERS (Electric Motor)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

STEAMSHIP COMPANIES
Cleveland & Buffalo Transit Co., E. 9th St., Cleveland, Ohio.

STEEL
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, Ohio.
Gulf States Steel Co., Birmingham, Ala.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Cal.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Superior Steel Corp., Union Trust Bldg., Pittsburgh, Pa.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL (Agricultural)
Bethlehem Steel Co., Bethlehem, Pa.

STEEL (Alloy)
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Firth-Sterling Steel Co., McKeesport, Pa.
Hawkridge Bros., 303 Congress St., Boston, Mass.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Ludlum Steel Co., Watervliet, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., The, Canton, O.
Vanadium Corp. of America, 120 Broadway, New York City.
Wheelock, Lovejoy & Co., 128 Sidney St., Cambridge, Mass.

STEEL (Alloy, Cold Drawn)
Timken Roller Bearing Co., The, Canton, O.
Union Drawn Steel Co., Beaver Falls, Pa.

STEEL (Cold Drawn)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Hawkridge Bros., 303 Congress St., Boston, Mass.
Kidd Drawn Steel Co., Aliquippa, Pa.
Moltrup Steel Products Co., Beaver Falls, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

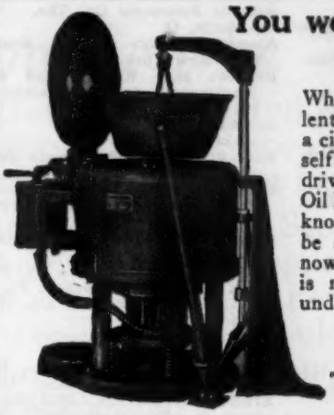
Hand Benders

Angle, Eye, Ring, and Hinge,

for light, medium and heavy factory service, accurately turning bar iron and steel (rounds and flats) to any desired angle or form, eyes with and without offset, brackets, hangers, staples, cranks, yokes, etc., at great saving of labor and time. "The Bending Book" free on request.

D. A. HINMAN & CO.
20 Main St. Sandwich, Ill.

You would not throw away money



Why throw away its equivalent in oil? Write today for a circular describing the new self-contained, electrically driven Curtis Centrifugal Oil Extractor. Then you will know how much money can be saved and how much is now being lost. The motor is mounted on the spindle under the pan.

Leon J. Barrett
Successor to
The Curtis Machine Co.
Worcester, Mass.

MORGAN

DESIGNERS-MANUFACTURERS-CONTRACTORS

Electric Traveling Cranes, Charging Cranes, Ingot Strippers, Steam Hammers, Drop Hammers, Forging Presses, Hydraulic Presses, Rock Crushers, Rolling Mill Equipment Locomotive Repairing and Rebuilding.

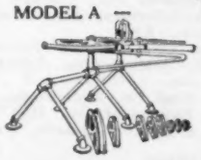
THE MORGAN ENGINEERING CO., ALLIANCE, OHIO

Rolling Mill Equipment
Chill Rolls
Gears and Gear Reduction Units

LEWIS FOUNDRY & MACHINE CO.
PITTSBURGH, PA., U. S. A.

"Wonder" Cold Pipe and Tubing Benders

MODEL A



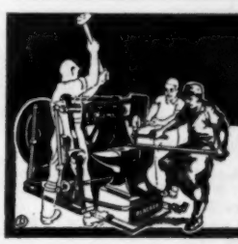
Standard of the World
HAND AND MOTOR OPERATED
14 Sizes of Machines
What it costs to bend pipe our way. Per Bend:
1-in. pipe, 5 cents 4-in. pipe, 25 cents
2-in. pipe, 10 cents 6-in. pipe, 60 cents
8-in. pipe, $1.00
Send for Catalogue
American Pipe Bending Machine Co.
45 Pearl St., Boston, Mass.

BOLT, NUT, FORGING and WIRE NAIL MACHINERY

"National" Wedge Grip Bolt and Rivet Headers, National Bolt Cutter, National Heavy-Pattern Forging Machines, etc.

We solicit your inquiries

THE NATIONAL MACHINERY COMPANY
TIFFIN, OHIO, U. S. A.



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"Now the Hand Anvil —is Worked by Machine!"

Write for our folder on Modern Blacksmithing.
BLACKER ENGINEERING CO.
72 East 45 St. New York.

Thomas Spacing Machine Co.

THOMAS SPACING TABLES

Fulton Building
Pittsburgh, Pa.

THOMAS MULTIPLE PUNCHES

Eastern Sales Office:
915 Commercial Trust Bldg., Philadelphia, Pa.

Western Sales Office:
936 Monadnock Block, Chicago, Ill.

TREADWELL

Better Grade Machinery

Merchant Mills
Wire Rod Mills
Hot Strip Mills

Hoisting Machinery
Special Machinery
Steel and Iron Castings

Treadwell Engineering Company, Easton, Pa.

COLD STRIP MACHINERY

THE BLAKE & JOHNSON CO.
WATERBURY, CONN.

P. O. Box 1054 Established 1849

"STANDARD"

Well Made Products Include

Seamless Tube Mills · Lap and Butt Welded Pipe Mills · Bar and Sheet Mills · Cold Drawing Machinery Shears · Roll Lathes · Sand and Chilled Iron Rolls · Iron Castings, etc.

Standard Engineering Co., Ellwood City, Pa.

CHAMBERSBURG

Steam, Steam Drop, and Board Drop Hammers
Trimming Presses Punches and Shears
Hydraulic Machinery of all Types and Sizes
Presses, Riveters, Pumps and Accumulators
Special Machinery Designed and Built

Chambersburg Engineering Co., Chambersburg, Pa.

Superior Steel Products Co., Monaca, Pa.
Union Drawn Steel Co., Beaver Falls, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL (Crucible)
Columbia Tool Steel Co., Chicago Heights, Ill.
Firth-Sterling Steel Co., McKeesport, Pa.
Hawkridge Bros., 303 Congress St., Boston, Mass.

STEEL (Drill)
Stulz-Sickles Co., 121 Lafayette St., Newark, N. J.

STEEL (Electric)
Ludlum Steel Co., Watervliet, N. Y.

STEEL (High Speed)
Allen, Edgar, Steel Co., Inc., 718-722 W. Lake St., Chicago, Ill.
Columbia Tool Steel Co., Chicago Heights, Ill.
Firth-Sterling Steel Co., McKeesport, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Vanadium Alloys Steel Co., Latrobe Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

STEEL (Oil Hardening)
Columbia Tool Steel Co., Chicago Heights, Ill.

STEEL (Open Hearth)
Central Steel Co., Massillon, Ohio.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Washburn Wire Co., Phillipsdale, R. I.

STEEL (Open-hearth—Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

STEEL (Rustless)
Firth-Sterling Steel Co., McKeesport, Pa.
Ludlum Steel Co., Watervliet, N. Y.

STEEL (Screw Stock)
Superior Steel Products Co., Monaca, Pa.

STEEL (Spring)
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

STEEL (Stainless)
Allegheny Steel Co., Brackenridge, Pa.
Firth-Sterling-Steel Co., McKeesport, Pa.

STEEL (Stamping and Drawing)
Columbia Steel Co., Standard Life Bldg., Pittsburgh, Pa.
Griffin Mfg. Co., 15th and Cherry Sts., Erie, Pa.
Superior Steel Corp., Union Trust Bldg., Pittsburgh, Pa.

STEEL (Strip, Hot and Cold Rolled)
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
American Tube & Stamping Co., The, Bridgeport, Conn.
Central Steel Co., Massillon, Ohio.
Columbia Steel Co., Standard Life Bldg., Pittsburgh, Pa.
Elliott-Blair Steel Co., New Castle, Pa.
Griffin Mfg. Co., 15th and Cherry Sts., Erie, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Morris & Bailey Division, Oliver Iron & Steel Corp., Wilson Station, Pittsburgh, Pa.
Pittsburgh Cold Rolled Steel Co., Verona, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Superior Steel Corp., Union Trust Bldg., Pittsburgh, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh, Pa.

STEEL (Structural)
Alliance Structural Co., The, Alliance, O.
American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Bollinger-Andrews Construction Co., 1016 Empire Bldg., Pittsburgh, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Eichleay, John, Jr., Co., So. 20th and Wharton, Pittsburgh, Pa.
Erie Steel Construction Co., The, Erie, Pa.
Fleming Mfg. Co., New Castle, Pa.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Kratzer W. N., Co., 3212 Smallman St., Pittsburgh, Pa.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Moss, J. E., Iron Works, Wheeling, W. Va.
Ohio Structural Steel Co., The, Newton Falls, O.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Cal.
Phillips, F. R., & Sons Co. Pennsylvania Bldg., Philadelphia, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Truscon Steel Co., Youngstown, O.
Wallace Equipment Co., 11th St., S. W. & Hanford, Seattle, Wash.

STEEL (Tool)
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Tool Steel Co., Chicago Heights, Ill.
Firth-Sterling Steel Co., McKeesport, Pa.
Hawkridge Bros., 303 Congress St., Boston, Mass.
Kidd Drawn Steel Co., Aliquippa, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Ryerson, Jos. T., & Son., Inc., 16th and Rockwell Sts., Chicago, Ill.
Stultz-Sickles Co., 121 LaFayette St., Newark, N. J.
Vanadium Alloys Steel Co., Latrobe, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

STEEL BUILDINGS—See BRIDGES, BUILDINGS AND VIADUCTS

STEEL CARBON
Bethlehem Steel Co., Bethlehem, Pa.

STEEL DOORS AND SHUTTERS
Kinnear Mfg. Co., 818-868 Field Ave., Columbus, O.

STEEL FABRICATORS—See BRIDGES, BUILDINGS AND VIADUCTS

STEEL PLATE CONSTRUCTION
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Gerstner Boiler Works, 39th and Neville St., Pittsburgh, Pa.
Hammond Iron Works, Warren, Pa.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Petroleum Iron Works Co., Sharon, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Sotter Bros., Inc., Pottstown, Pa.
Steel Plate Products Co., Pottstown, Pa.

STEEL PLATES — See PLATES (Iron and Steel)

STEEL STAMPINGS—See STAMPINGS

STELLITE
Haynes Stellite Co., 30 E. 42nd St., New York City.

STEPS (Ladder and Stair, Non-slipping)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.

STOCK LINE RECORDER (Electric)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

STOKERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Combustion Engineering Corp., 43 Broad St., New York City.

STOOLS AND FACTORY EQUIPMENT (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

STRAIGHTENING MACHINERY
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Shuster, The F. B., Co., New Haven, Conn.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

STRAPPING (Leather)
Williams, I. B., & Sons, Dover, N. H.

STRIP MILLS (Hot or Cold)
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Treadwell Engineering Co., Easton, Pa.

STRIP STEEL STRAIGHTENERS
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Shuster, The F. B., Co. New Haven, Conn.

STRIP (Steel and Cold Rolled)—See STEEL (Strip, Hot or Cold Rolled)

STRUCTURAL IRON AND STEEL WORK — See STEEL (Structural)

SUB-PRESSES — See PRESSES (Sub.)

SULPHURIC ACID
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.

SWITCH STANDS
Bethlehem Steel Co., Bethlehem, Pa.

SWITCHES (Electric)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

TANKS
Gerstner Boiler Works, 39th and Neville Sts., Pittsburgh, Pa.

TANKS (Acetylene)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

TANKS (Storage, Pressure, Riveted, Welded)
Air Tight Steel Tank Co., Mansion and Gloster Sts., Pittsburgh, Pa.
Hammond Iron Works, Warren, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Petroleum Iron Works Co., Sharon, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Sotter Bros., Inc., Pottstown, Pa.
Steel Plate Products Co., Pottstown, Pa.

TANKS (Wooden, Acid and Pickling)
Kalamazoo Tank & Silo Co., 504 Harrison St., Kalamazoo, Mich.

TAPPING MACHINES
National Machinery Co., The, Tiffin, O.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

TAPPING MACHINES (Friction Drive Type)
Rickert-Shafer Co., Dept. T. M., Erie, Pa.

TAPS (Collapsible)
Rickert-Shafer Co., Dept. T. M., Erie, Pa.

TAPS AND DIES
Landis Machine Co., Waynesboro, Pa.

TERNE PLATE
American Steel & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.

TESTING MACHINES (Pipe)
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

THREAD CUTTING TOOLS
Landis Machine Co., Waynesboro, Pa.
Williams Tool Corp., W. 12th and Liberty, Erie, Pa.

THREADING MACHINERY
National Machinery Co., The, Tiffin, O.
Rickert-Shafer Co., Dept. T. M., Erie, Pa.

TIE PLATES
Illinois Steel Co., 206 S. La Salle St., Chicago, Ill.

TIES (Creosoted)
Century Wood Preserving Co., 1053 Century Bldg., Pittsburgh, Pa.

TIN PLATE
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Works, The Granite City, Ill.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
National Enameling & Stamping Co., Granite City, Ill.
Trumbull Steel Co., The, Warren, O.
Weirton Steel Co., Weirton, W. Va.

TIN PLATE MILL EQUIPMENT
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.

TITANIUM
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

TOOL BITS (High Speed)
Firth-Sterling Steel Co., McKeesport, Pa.

TOOL BITS (Stellite)
Haynes Stellite Co., 30 E. 42nd St., New York City.

TOOLS (Pneumatic)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co, 11 Broadway, New York City.

TOOLS (Portable Electric)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.

TORCHES AND BURNERS (Acetylene, Blow, Oxy-Acetylene)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

TORCHES AND BURNERS (Kerosene and Fuel Oil)
Hauck Mfg. Co., 114 Tenth St., Brooklyn, N. Y.

TOWERS (Transmission)
American Bridge Co., 71 Broadway, New York City.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Cal.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Cuts are made in Seconds on a "Hunter"

The 6" Channel shown above was cut on a "Hunter" in seven seconds. The Steel Tube, 3" square with 3/16" wall was cut in five seconds.

The No. 1 Hunter High Speed Metal Cut-Off Saw is a big producer on a wide range of work. It cuts and trims accurately at high speed.

The "Hunter" cuts Light Section Beams, Channels, Angles, Brass, Copper, Structural and Welded Tubing, Pipe, Fence and Fire Escape Materials, Metal Mouldings, Metal Furniture Parts, Light Section Pressed and Drawn Steel Shapes, etc.

Send us material and we will make a time-study of your work. Ask for our circular No. 18.

Hunter Saw & Machine Co.

5656 Butler Street,
PITTSBURGH, PA.

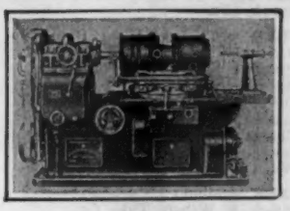
We also manufacture Circular Metal Cutting Saws, Pneumatic Hammer Rivet Sets and Chisel Blanks, Hardened Steel Specialties

THE JOHNSON FRICTION CLUTCH

On the Micro F-G Railroad Grinder.

On the Micro F-G Railroad Grinder shown here the No. 2 and No. 5 Johnson Single Clutches are installed. Johnson Clutches are used very extensively on all kinds of heavy-duty grinders, milling machines, boring mills, etc. Although very compact, the Johnsons have great strength, amazing resistance and tremendous power. Full data and blue prints on request. Equip with Johnson Clutches.

Write for White Catalog



COURTESY: The Micro Machine Co., Bettendorf, Iowa.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

"NEW PROCESS" PUNCHES-DIES
COUPLINGS
RIVET MACHINE GRIPPING & HEADING DIES
SHEAR BLADES

Guaranteed Tools

We manufacture strictly on a quality basis, therefore we use the best materials that can be bought. May we serve you?

GEO. F. MARCHANT COMPANY

1434 SO. ROCKWELL ST., CHICAGO

AIR HAMMER CHISEL BLANKS
"VANADIUM" AIR HAMMER RIVET SETS
"HEATPROOF" COMPRESSION RIVETER DIES

TRACTORS
Ford Motor Co., Detroit, Mich.

TRAMRAILS
Cleveland Electric Tramrail, Division of the Cleveland Crane and Engineering Co., Wickliffe, O.
Harnischfeger Corp., 38th and National, Milwaukee, Wis.

TRANSFORMERS (Speed)
Ganschow Co., Wm., 24 N. Morgan St., Chicago, Ill.

THREADS (Nonslipping)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.

TREADS (Stair)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

TROLLEYS
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Milwaukee Electric Crane & Mfg. Corp., Milwaukee, Wis.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

TRUCKS (Elevating)
Baker Raulang Co., The, 2180 West 25th St., Cleveland, O.

TRUCKS (Motor)
Ford Motor Co., Detroit, Mich.

TRUCKS (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

TRUCKS AND TRACTORS (Electric Industrial)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Baker Raulang Co., The, 2180 West 25th St., Cleveland, O.

TUBE MILL MACHINERY
Mackintosh-Hemphill Co., 12th & Etna Sts., Pittsburgh, Pa.
Standard Engineering Co., Ellwood City, Pa.
Treadwell Engineering Co., Easton, Pa.
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Tyler Tube & Pipe Co., The, Washington, Pa.

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Babcock & Wilcox Tube Co., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Keating, E. F., Co., 446-54 Water St., New York City.
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National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th & Rockwell Sts., Chicago, Ill.
Tyler Tube & Pipe Co., Washington, Pa.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

TUBES (Charcoal Iron Boiler)
Bethlehem Steel Co., Bethlehem, Pa.
Tyler Tube & Pipe Co., The, Washington, Pa.

TUBES (Cold Drawn Seamless Steel)
Babcock & Wilcox Tube Co., Beaver Falls, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Summerill Tubing Co., Bridgeport, Pa.
Timken Roller Bearing Co., The, Canton, O.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

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Allegheny Steel Co., Brackenridge, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Tyler Tube & Pipe Co., The, Washington, Pa.

TUBING (Seamless Steel and Lap-Welded)
Keating, E. F., Co., 446-54 Water St., New York City.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

TUBING (Steel)
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.

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Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

TURBO BLOWERS—See BLOWERS

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TUYERES
Climax Fire Brick Co., Climax, Pa.
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Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

TWIST DRILLS — See DRILLS

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Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.

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Oxweld Acetylene Co., 30 E. 42nd St., New York City.

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Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.

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Jenkins Brothers, 80 White St., New York City.
Pittsburgh Valve Fdry. & Construction Co., 26th & A. V. Ry., Pittsburgh, Pa.

VANADIUM
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VIADUCTS (Steel)—See BRIDGES BUILDINGS AND VIADUCTS

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Irving Iron Works, Long Island City, N. Y.

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Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Union Drawn Steel Co., Beaver Falls, Pa.

WASHERS (Iron and Steel)
Bethlehem Steel Co., Bethlehm, Pa.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.

WASHERS (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

WASHERS (Wrought)
Joliet Wrought Washer Co., Joliet, Ill.

WASHING MATERIAL (Rags)
Ford, The J. B., Co., Wyandotte, Mich.

WATER SYSTEMS
Myers, F. E., & Brother Co., The, Ashland, Ohio.

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WELDING AND CUTTING APPARATUS (Electric)
Allan Mfg. & Welding Co., 726 Washington St., Buffalo, N. Y.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Wilson Welder & Metals Co., Wilson Bldg., Hoboken Factory Terminal, Hoboken, N. J.

WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene)
International Oxygen Co., Newark, N. J.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

WELDING AND CUTTING (Gas)
Prest-O-Lite Co., Inc., The, 30 E. 42nd St., New York City.

WELDING APPARATUS (Plastic-Arc)
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.
Wilson Welder & Metals Co., Wilson Bldg., Hoboken Factory Terminal, Hoboken, N. J.

WELDING FLUX (Iron, Brass, Steel) see FLUX (Welding)

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American Brass Co., 25 Broadway, New York City.

WELDING RODS AND WIRE
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

WELDING SUPPLIES
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

WELDING WIRE
Roebling's, John A., Sons Co., Trenton, N. J.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.
Wilson Welder & Metals Co., Wilson Bldg., Hoboken Factory Terminal, Hoboken, N. J.

WHEELS (Car and Locomotive)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
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Stroh Steel Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.

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Motor Wheel Corp., Lansing, Mich.

WINDOW CLEANING MATERIAL
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WINDOWS—FIRE PROOF (Hollow Metal)
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

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American Steel Co., Elmwood City, Pa.
Interstate Iron & Steel Co., 104 So. Michigan Ave., Chicago, Ill.
Washburn Wire Co., Inc., 118th and Harlem River, New York City.

WIRE (Annealed, Bright, Galvanized)
Bethlehem Steel Co., Bethlehem, Pa.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.

WIRE (Fence)
American Steel & Wire Co., 208 S. La Salle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

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Roebling's, John A., Sons Co., Trenton, N. J.

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Cleveland Wire Cloth & Mfg. Co., 3571 East 78th St., Cleveland, O.

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Treadwell Engineering Co., Easton, Pa.

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Morgan Construction Co., Worcester, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

WIRE NAIL MACHINERY
National Machinery Co., Tiffin, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

WIRE NAILS—See NAILS

WIRE POINTERS (Roll)
Sleeper & Hartley, Inc., Worcester, Mass.

WIRE RODS
Bethlehem Steel Co., Bethlehem, Pa.

WIRE ROPE
American Steel & Wire Co., 208 So. La Salle St., Chicago, Ill.
Roebling's, John A., Sons Co., Trenton, N. J.

WIRE ROPE FITTINGS
Roebling's, John A., Sons Co., Trenton, N. J.

WIRE ROPE SLINGS
Roebling's, John A., Sons Co., Trenton, N. J.

WIRE STRAIGHTENERS AND CUTTING MACHINES
Shuster, The F. B., Co., New Haven, Conn.

WIRE, WIRE RODS AND WIRE PRODUCTS
American Steel & Wire Co., 208 So. La Salle St., Chicago, Ill.
Columbia Steel Corp., Balfour Bldg., San Francisco, Calif.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Wheeling Steel Corp., Wheeling, W. Va.

ZIRCONIUM METAL AND ALLOYS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

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